

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

MICROSOFT CORPORATION,)	
)	
Plaintiff,)	
)	
v.)	C.A. No. 07-090 (SLR)
)	
ALCATEL-LUCENT ENTERPRISE and)	REDACTED –
GENESYS TELECOMMUNICATIONS)	PUBLIC VERSION
LABORATORIES, INC.,)	
)	
Defendants.)	

**DEFENDANT ALCATEL LUCENT ENTERPRISE'S OPENING BRIEF
IN SUPPORT OF ITS MOTION FOR SUMMARY JUDGMENT OF
NON-INFRINGEMENT AND INVALIDITY OF ALL ASSERTED CLAIMS OF
UNITED STATES PATENT NO. 6,421,439**

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NATURE AND STAGE OF THE PROCEEDINGS

On February 16, 2007, Microsoft Corporation (“Microsoft”) filed a complaint with the United States International Trade Commission (“the related ITC matter”). On the same day, Microsoft filed this action in the District of Delaware for patent infringement, claiming that two PBX-software suite combinations manufactured and sold by Alcatel Lucent Enterprise (“ALE”), the OXE System and the OXO System, infringe four Microsoft patents. One of those patents, U.S. Patent No. 6,421,439 (“the ’439 Patent”), is the patent at issue in this motion.

Microsoft asserts that the ALE OXE System infringes claims 1, 2, 9, 21, 24, 28, 36, 38, 43 and 48 of the ’439 Patent and the ALE OXO System infringes claims 1, 2, 21, 28, 38 and 43 of the ’439 Patent. Summary judgment is warranted because the undisputed facts demonstrate that the accused products do not infringe the asserted claims and that the asserted ’439 Patent claims are invalid as a matter of law because they are anticipated by the prior art.

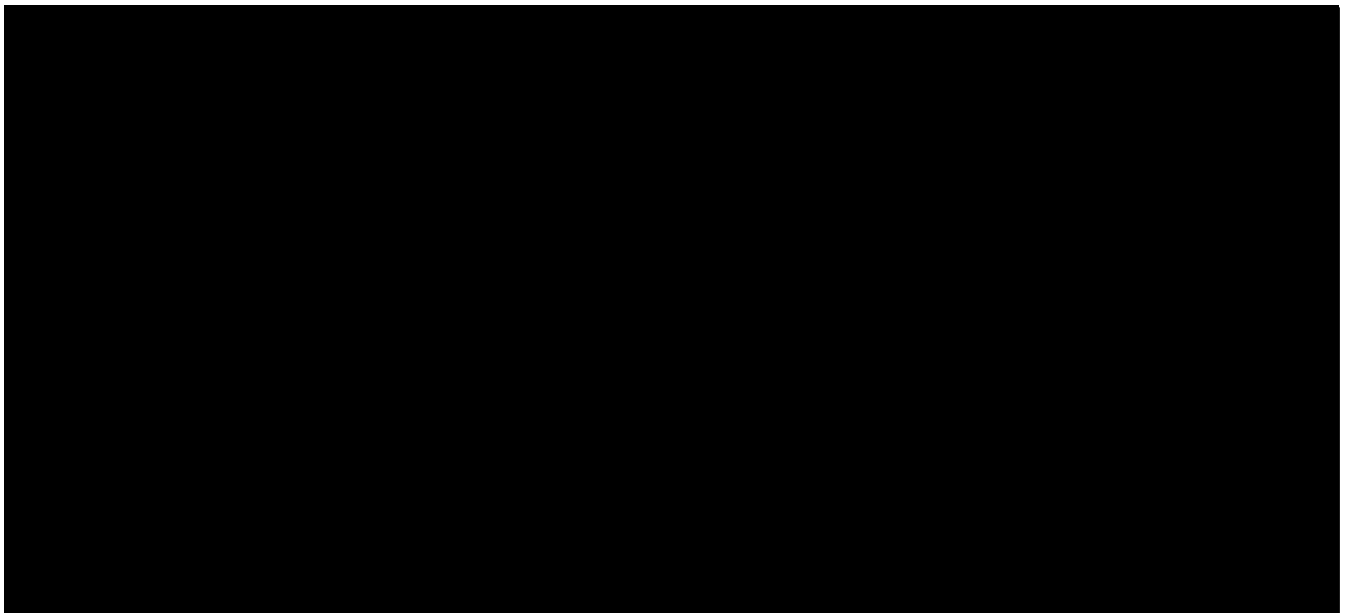
SUMMARY OF ARGUMENT

The ’439 Patent relates to a system for processing and handling incoming phone calls. Specifically, the ’439 Patent claims a system where a user of the system can store criteria for processing the incoming calls on a computer network, such that the call processing criteria can be accessed and changed by the user. Importantly for this case, all claims of the ’439 Patent require that at least some of the call processing criteria process incoming calls according to current activity of the called party (or caller) on the computer network. In other words, there must be call processing criteria in the system that will take into account the user’s current activity on the computer network when processing calls. An example is a system with the capability to process calls according to whether a user is logged on the office computer network. Another example is a system with the capability to route calls to a cell phone number when the

user is not logged on the office computer network from any device. Without the capability to process calls according to the current activity of the called party (or calling party) on the computer network, a system cannot meet any of the asserted claims of the '439 Patent.

Recognizing that the accused systems have no capability to process calls according to the current activity of the called party on the computer network, Microsoft attempts to manufacture a claim by contending that the ability of the accused systems to route an incoming call to voicemail (or another extension) when a user is engaged in a call on a soft phone meets the asserted claims. (A soft phone is simply an application that runs on a general purpose computer used with a microphone and a speaker to allow the user to create a telephone using resources of the computer (as opposed to a stand alone phone)). Notably, Microsoft does not contend that exactly the same functionality when used with a traditional phone (as it has been used for many years) instead of a soft phone meets the claims. Yet, the mechanism for handling calls when a user is engaged in a phone call in the accused systems is identical, regardless of the type of phone the user employs. The accused systems simply do not have the required capability.

A. The Accused Products Do Not Infringe Under ALE's or Microsoft's Construction



B. The '439 Patent also is Anticipated by Chestnut

The Chestnut Patent (U.S. Patent No. 6,041,114) is prior art and anticipates each asserted claim of the '439 Patent. The Chestnut Patent discloses a telecommunication system with a computer network (such as a LAN, WAN, etc.) integrated with a private branch exchange (PBX) connected to a Public Switched Telephone Network (PSTN). (Ex. 2 (Chestnut Patent) at Abstract.) The invention of the Chestnut Patent relates to a "telecommunications management system which controls call forwarding based upon user activity on an associated computer terminal." (*Id.* at 1:4-8.) The Chestnut Patent discloses a system where the user can store on the computer network a list of rules for processing incoming calls, including rules that associate a specific telephone number with a user's computer network log on device. So, if the user is

logged on the computer network using the office computer, the rule may route calls to that user's office extension. If, however, the user is logged on the office computer network using a home computer, a rule may route calls to a number in the user's home office. As discussed in detail in the Argument section below, the Chestnut Patent discloses every limitation of the asserted claims of the '439 Patent. Thus, summary judgment of invalidity is appropriate.

STATEMENT OF FACTS

A detailed statement of facts is included in the Argument section below.

ARGUMENT

A. THE ACCUSED SYSTEMS DO NOT INFRINGE THE ASSERTED CLAIMS OF THE '439 PATENT

1. The '439 Patent Background

The '439 Patent, entitled "System and Method for User Affiliation in a Telephone Network," issued on July 16, 2002 to named inventor Stephen Mitchell Liffick. (Ex. 1 ('439 Patent) at cover.) Microsoft is the assignee of the '439 Patent. (*Id.*)

a. The Inventor Believed Existing Call Processing Capabilities, Such As Voice Mail and Call Forwarding Were Insufficient

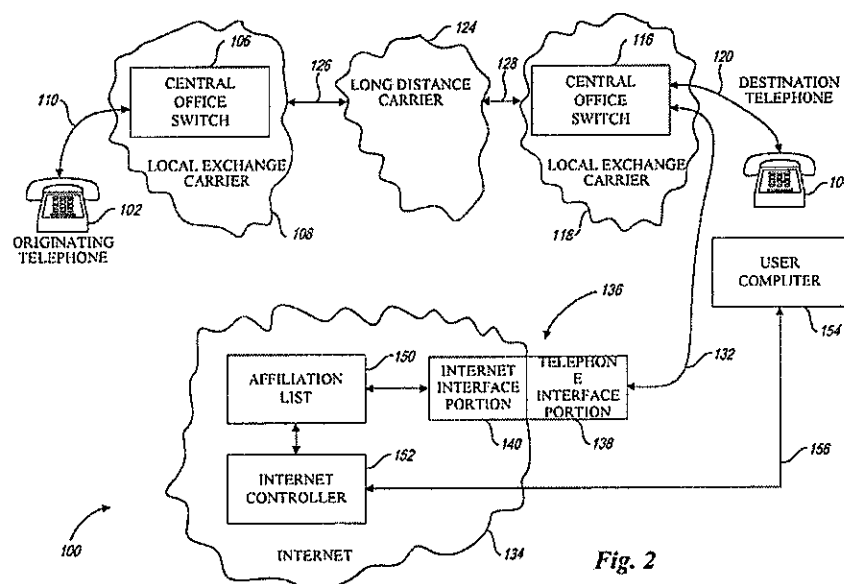
The '439 Patent recognizes that then-existing telephone services included a "wide range of options, such as voice mail, caller identification, call waiting, call forwarding, three-way calling and the like." (*Id.* at 1:18-20.) The '439 Patent further recognizes that a "conventional central office switch provides the ability to divert calls based on certain call conditions, such as 'Call Forward No Answer,' which may be used to divert an incoming call to voicemail, or 'Call Forward Busy,' which may also divert the incoming call to voicemail." (*Id.* at 11:4-9.)

The '439 Patent described these options as insufficient because "the user is still limited in determining with whom the user wishes to speak and when the user wishes to speak with certain parties or, at the user's option, not speak with certain parties." (*Id.* at 1:23-35.) The '439 Patent identified the problem it was trying to solve as: "Existing telephone technology does not provide the telephone subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls." (*Id.* at 2:57-63.)

b. The Inventor Sought to Provide a Way to Control Calls Based Upon Current Activity of Callers on a Computer Network

The '439 Patent is directed to a "system and method to control incoming calls to a user's telephone." (*Id.* at 1:37-38.) Incoming calls to a called party's telephone are controlled by allowing the called party to specify call processing criteria ("user-selectable criteria") that are stored on a computer network and accessible by the telephone network. (*Id.* at 1:44-50.)

Figure 2 of the '439 Patent depicts one example of the system:



As depicted, the system includes an “affiliation list” that is stored on a computer network and that contains the user-selectable criteria for processing incoming calls. (*Id.* at Abstract, 1:44-50, 2:66-3:4, 6:23-28.)

The method of the ‘439 Patent involves a telephone switch receiving an incoming call for a destination telephone number and then accessing the affiliation list on the computer network through intervening network components in order to process the incoming call according to the user-selectable criteria. (*Id.* at Abstract.) The user-selectable criteria may specify that the called party accepts all incoming calls, no incoming calls or only incoming calls from certain parties, and may also include call processing rules that vary based on factors such as the time of day. (*Id.* at Abstract, 1:65-2:1.) In addition to processing incoming calls based on rules relating to the identification of the calling party and the time of day, the claims of the ‘439 Patent *require* processing incoming calls based on the *current activity of the user on the computer network*. (*Id.* at 14:18-26.) That express requirement is not met by the accused systems.

c. During the Prosecution of the ‘439 Patent, the Applicant Added The “Current Activity Of The User On the Computer Network” Limitation to Distinguish the Prior Art

On March 24, 1999, Microsoft filed U.S. Patent Application No. 09/275,689 for an invention entitled: “System and Method For User Affiliation In A Telephone Network.” (Ex. 3 (Prosecution History of the ‘439 Patent) at MSAL 00528.)

1. Claim 1 of the originally filed claims recited:

A system for user specification of call processing in a telephone network having a user telephone coupled to a telephone network, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing;

a computer network access port used by the telephone network to access the data structure; and

a controller to receive an incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

(*Id.* at MSAL 00556.)

The originally filed claims did not recite any limitation regarding filtering an incoming call according to the “current activity of subscribers on the computer network or according to current activity of the user on the computer network.” (*Id.* at MSAL 00556.) The USPTO rejected certain of the pending claims as being anticipated by U.S. Patent No. 5,329,578 issued to Brennan et al. (the “Brennan Patent”). (*Id.* at MSAL 00588.) The PTO Examiner explained the basis for the rejection as follows:

Brennan teaches a system, method, and a computer readable medium for user specification of call processing in a telephone network having a user telephone (Fig. 1, 15-17) coupled to the telephone network (Fig. 1, 12), the system comprising: a data structure contained within a computer network (Fig. 1b, 10) to store user selectable criteria for call processing (Fig. 1b, 24); a computer network access port used by the telephone network to access the data structure (Fig. 1c); and a controller (Fig. 1c, 48) to receive an incoming call designated for the user telephone 15-17 and to process the incoming call in accordance with the user-selectable criteria (column 3, line 54 through column 4, line 18), the controller accessing the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call (column 4, lines 19-35).

(*Id.* at MSAL 00588-89.)

The Brennan Patent, titled “Personal Communication Service With Mobility Manager” discloses a telecommunications system where incoming calls are routed “according to the subscriber’s service profile stored in a database.” (Ex. 4 (Brennan Patent) at Abstract.) The system disclosed in the Brennan Patent includes rules that are “used to determine what action the

system should take with a call when the caller is normally allowed to reach the subscriber, but the subscriber couldn't be reached, or was not interruptible.” (*Id.* at 7:27-30.) The rules discussed in the Brennan Patent relate to the time of the day, day of the week that the subscriber can be reached:

Some subscribers may wish to change, at regular intervals, the way their calls are managed, e.g. only emergency calls after 11 p.m. weekdays and after midnight on weekends. ... Multiple time slots can be specified, e.g. Monday-Friday 0900-1700 hours, Saturday 1030-2330 hours, and “other” which defines what happens for non-specified time slots. For each of these predefined time slots, the Schedule can list the default devices to use in contacting the subscriber during that time, e.g. Monday-Friday 0730-0800 hours use car or home number, Monday-Friday 0800-0830 hours use car or office number. ... Similarly, the Schedule allows each slot to have an urgency of calls which the subscriber will accept, e.g. only urgent calls after 5 p.m. on weeknights and on weekends.

(*Id.* at 6:48-7:2.) In response to the USPTO's rejection, Microsoft submitted amended claims and remarks. For example, claim 1 was amended to include the highlighted language:

wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call *and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;*

(Ex. 3 (Prosecution History of the '439 Patent) at MSAL 00683 (emphasis added)). In support of its amended claims, Microsoft argued that:

With regard to Figures 2a-2g, Brennan teaches that the flow of information is fixed and is not dependent on any particular status or activity of the user or of the caller and that the flow of information is determined by the user's requirements for that particular caller.

Thus, the treatment of an incoming call [in Brennan] is dependent on a caller list that does not change. More specifically, actions or activity of callers on a telephone network or on a computer

network have no effect on the caller list or other user requirements for callers.

* * *

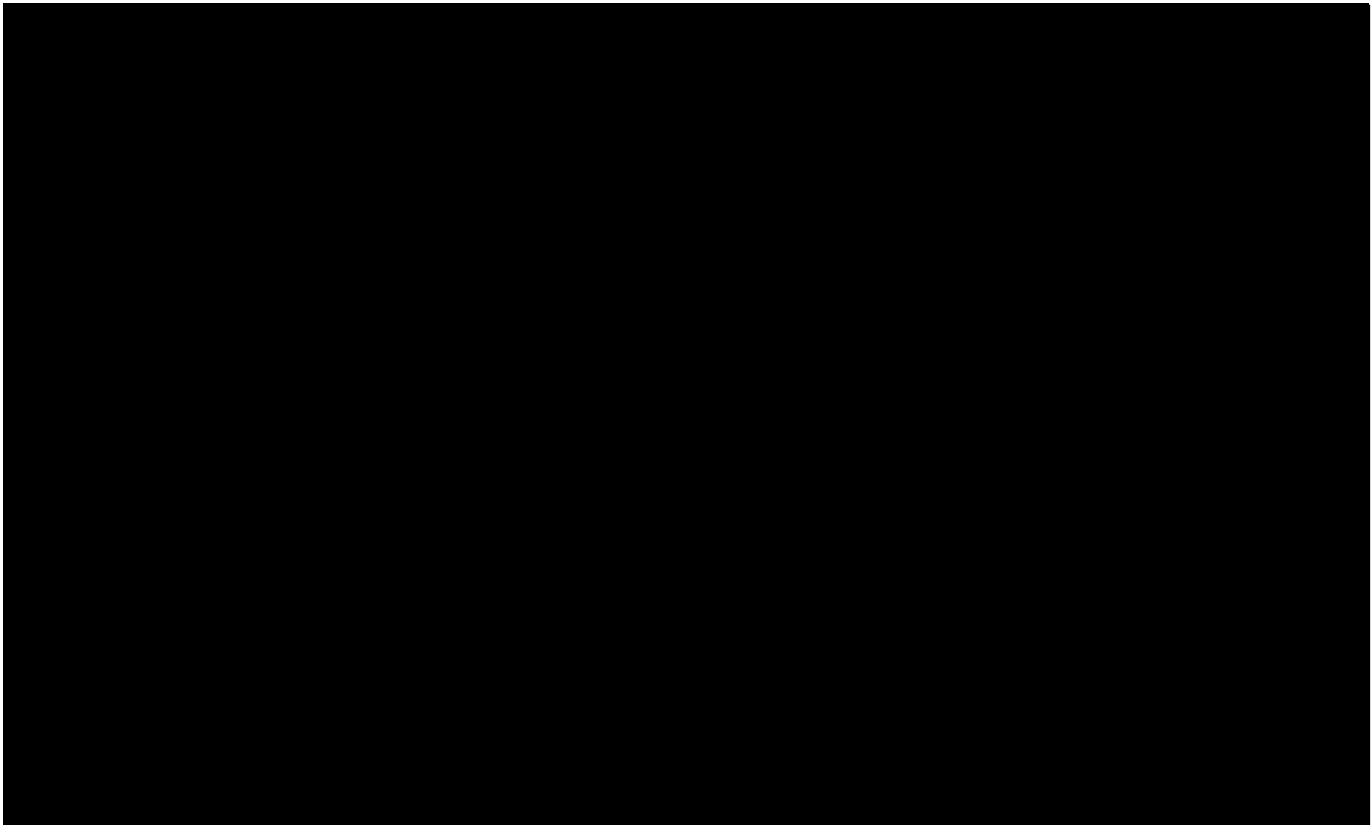
In contrast to Brennan, claim 1 as amended recites that the one or more lists used in filtering an incoming call change according to current activity of the subscribers (e.g., persons making the calls), or according to current activity of the user (e.g., intended recipient of the call). In one example, the current activity of the subscriber and/or the user does not typically occur on the telephone network. Instead the current activity of the subscriber and/or the user usually occurs on a computer network. The ability to process an incoming call on a telephone network according to activity on a computer network is not taught or suggested by Brennan.

(*Id.* at MSAL 00694-00695.) The amended claims were subsequently allowed.

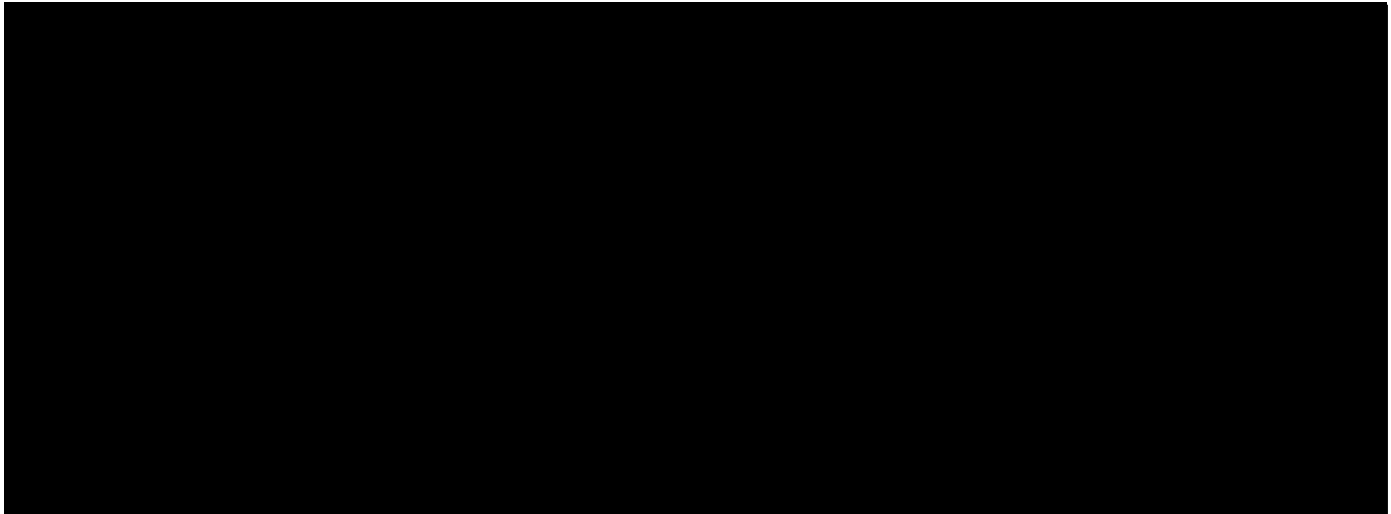
2. The Accused Products

As stated above, Microsoft asserts claims 1, 2, 9, 21, 24, 28, 36, 38, 43 and 48 of the '439 Patent against the ALE OXE System. (Ex. 5 (Beckmann Opening Report) at 6.) Microsoft asserts claims 1, 2, 21, 28, 38 and 439 of the '439 Patent against the ALE OXO System. (*Id.* at 7.) Microsoft accusations of infringement cover only combinations of Alcatel products that use a Voice over IP ("VoIP") soft phone. (*Id.* at 3-4, Ex. E at 1, Ex. G at 1.)

a. The Accused ALE OXE System Is a Combination of Products



- b. The Accused Alcatel OXO System Is A Combination Of Products**



- c. Microsoft Claims That, In The Accused ALE Systems, "Current Activity Of The User On The Computer Network" Is Satisfied By A User On A Call Using a Soft Phone**



¹ To the extent that Microsoft argues that “activity on the computer network” is satisfied by the data transfer that occurs when a user is engaged in a VoIP call, Microsoft’s argument contradicts its own construction of the claim limitation. Under Microsoft’s construction of “telephone network,” the transfer of data when the user is engaged in a VoIP call is *telephony information* and therefore by definition, *on the telephone network*. Therefore, this transfer of data cannot satisfy the “current activity of the user on the computer network” limitation because it occurs on the telephone network

3. Microsoft Cannot Satisfy Its Burden Of Proof On Direct Or Indirect Infringement

a. Legal Standard For Summary Judgment

Summary judgment “shall be rendered forthwith if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law.” FED. R. CIV. P. 56(c). At trial, the patentee has the burden of establishing infringement by a preponderance of the evidence. *Kao Corp. v. Unilever U.S., Inc.*, 441 F.3d 963, 972 (Fed. Cir. 2002). Summary judgment of non-infringement, therefore, is appropriate where “the patent owner’s proof is deficient in meeting an essential part of the legal standard for infringement, because such failure will render all other facts immaterial.” *TechSearch L.L.C. v. Intel Corp.*, 286 F.3d 1360, 1369 (Fed. Cir. 2002). In order to establish that the court should grant summary judgment, the defendant need only demonstrate “a deficiency concerning an element of the patent holder’s infringement claim.” *Linear Technology Corp. v. Impala Linear Corp.*, 379 F.3d 1311, 1325-26 (Fed. Cir. 2004). This burden is met by the “filing of a summary judgment motion stating that the patentee had no evidence of infringement and pointing to the specific ways in which accused systems did not meet the claim limitations.” *Exigent Technology, Inc. v. Atrana Solutions, Inc.*, 442 F.3d 1301, 1309 (Fed. Cir. 2006).

Infringement may be direct or indirect. Direct infringement is established by showing that each and every claim limitation is present in the accused product or method either literally or under the doctrine of equivalents.³ *Abraxis Bioscience, Inc. v. Mayne Pharma (USA), Inc.*, 467 F.3d 1370, 1378 (Fed. Cir. 2006). In order to meet this burden, the patentee must provide proof

³ Microsoft has not provided any infringement claims under a doctrine of equivalents theory.

that compares each of the asserted claims to each of the accused products or methods and demonstrates how each and every limitation of each and every claim is embodied in every accused product or method. *Hutchins v. Zoll Medical Corp.*, 492 F.3d 1377, 1380 (Fed. Cir. 2007). If even one claim limitation is missing or not met, there is no direct infringement and the court should grant summary judgment as a matter of law. *MicroStrategy, Inc. v. Business Objects, S.A.*, 429 F.3d 1344, 1352 (Fed. Cir. 2005); *Gentex Corp. v. Donnelly Corp.*, 69 F.3d 527, 530 (Fed. Cir. 1995).

There are two types of indirect infringement: contributory infringement and active inducement. In order to establish contributory infringement, the burden is on the patentee to demonstrate: (i) an act of direct infringement; (ii) that the component is a material part of the patented invention; (iii) that the defendant knows that the component is specifically made or adapted for use in an infringement of the patented invention; and (iv) that the component is not a staple article or a commodity of commerce suitable for substantial non-infringing uses. *Cross Medical Prods, Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1312 (Fed. Cir. 2005). Failure on the part of the patentee to establish any one of these elements constitutes a failure of proof entitling the defendant to summary judgment of non-infringement. *Dynacore Holdings Corp. v. U.S. Philips Corp.*, 363 F.3d 1263, 1278 (Fed. Cir. 2004) (affirming summary judgment of non-infringement where plaintiff failed to prove one of the necessary factors).

Section 271(b) of the Patent Act provides that “whoever actively induces infringement of a patent shall be liable as an infringer.” 35 U.S.C. § 271(b). Based on the theory of joint tortfeasance, the principles of inducing infringement have been held to be analogous to aiding and abetting in the criminal context. *Nat’l Presto Indus., Inc. v. West Bend Co.*, 76 F.3d 1185, 1194 (Fed. Cir. 1996); *Alcon Labs., Inc. v. Allergan, Inc.*, 256 F.Supp.2d 1080, 1087 (C.D. Cal.

2003). In order to establish active inducement the patentee must prove the following elements: (i) an act of direct infringement; (ii) knowledge of the patent-in-suit; (iii) an inducer's actual intent to cause the acts which they knew, or should have known, would induce actual infringement; and (iv) the commission of an act on the part of the inducer, not merely the power to act or failure to act, which constitutes inducement. *Black & Decker v. Catalina Lighting, Inc.*, 953 F. Supp. 134, 138 (E.D.Va. 1997). Failure on the part of the patentee to establish any of these elements is grounds for the grant of summary judgment of non-infringement. *E-Pass Technologies v. 3 Com Corp.*, 473 F.3d 1213, 1222-23 (Fed. Cir. 2007) (affirming summary judgment of non-infringement where plaintiff failed to prove one of the necessary factors).

4. ALE Does Not Directly Infringe Because The Accused Ale Products Do Not Filter Calls Based On "Current Activity Of The User On The Computer Network"

a. All of the Asserted Claims Require Call Filtering Based on the "Current Activity of the User on the Computer Network"

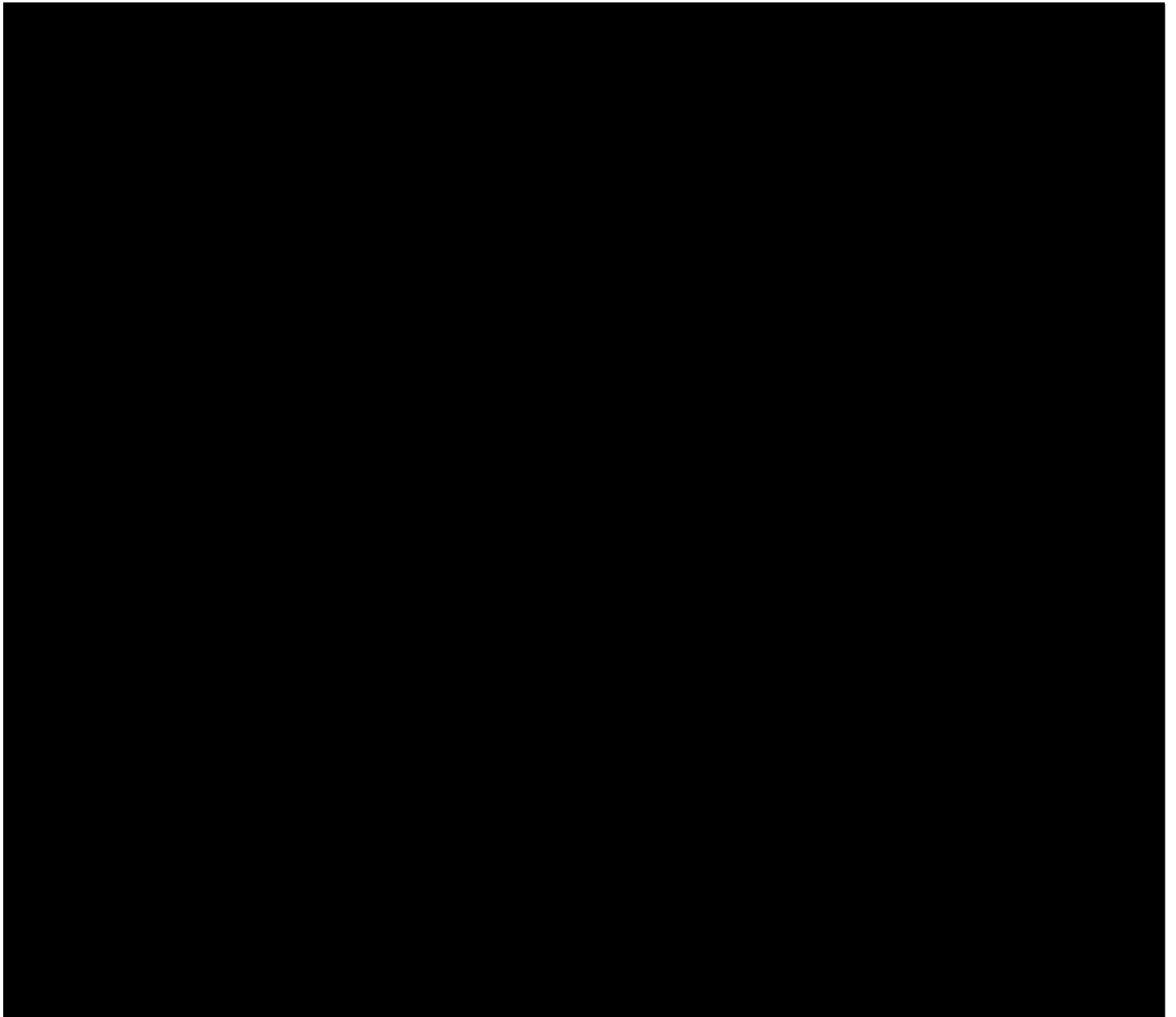
All of the asserted claims of the '439 Patent require filtering or processing an incoming call "according to current activity of the user on the computer network."

In particular, claims 1, 2, and 9 of the '439 Patent require that a "data structure stores the user-selectable criteria in one or more lists that are used in *filtering an incoming call* and wherein some of the one or more lists are used to filter the incoming call ... *according to current activity of the user on the computer network.*"


Claims 21 and 24 of the '439 Patent require that a "data structure containing a plurality of caller lists each having associated user-selectable criteria for *call processing* stored within the data structure, wherein some of the plurality of caller lists are conditioned ... *according to current activity of the user on the computer network.*"


Claims 28, 36, 38, 43, and 48 of the '439 Patent require "accessing a data structure ... to retrieve *user-selectable criteria for call processing* stored within the data structure, wherein some of the user-selectable criteria is conditioned ... *according to current activity of the user on the computer network* and *processing the incoming call in accordance with the user-selectable criteria.*"

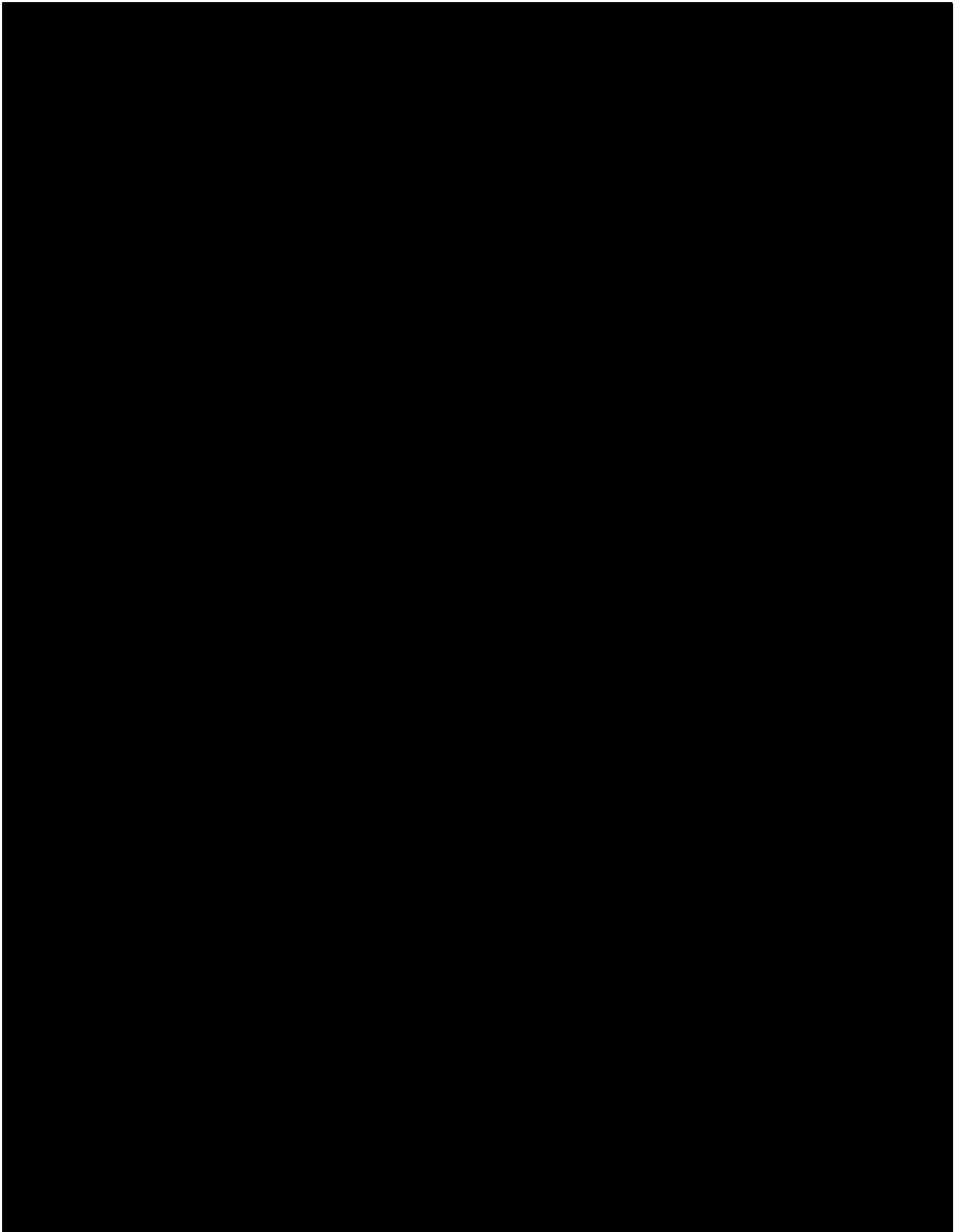
- b. **Microsoft's Infringement Theory Is Based On Forwarding An Incoming Call When The Called Party Is "Busy" On A VoIP Soft Phone Call.**



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- c. **In Microsoft's Infringement Theory, A Call Is Processed Based On The State Of The User's Extension On The Switch Itself.**

The parties agree that the Enterprise Switch and Office Switch components can be used with analog phones, digital phones, IP phones, and VoIP soft phones. 



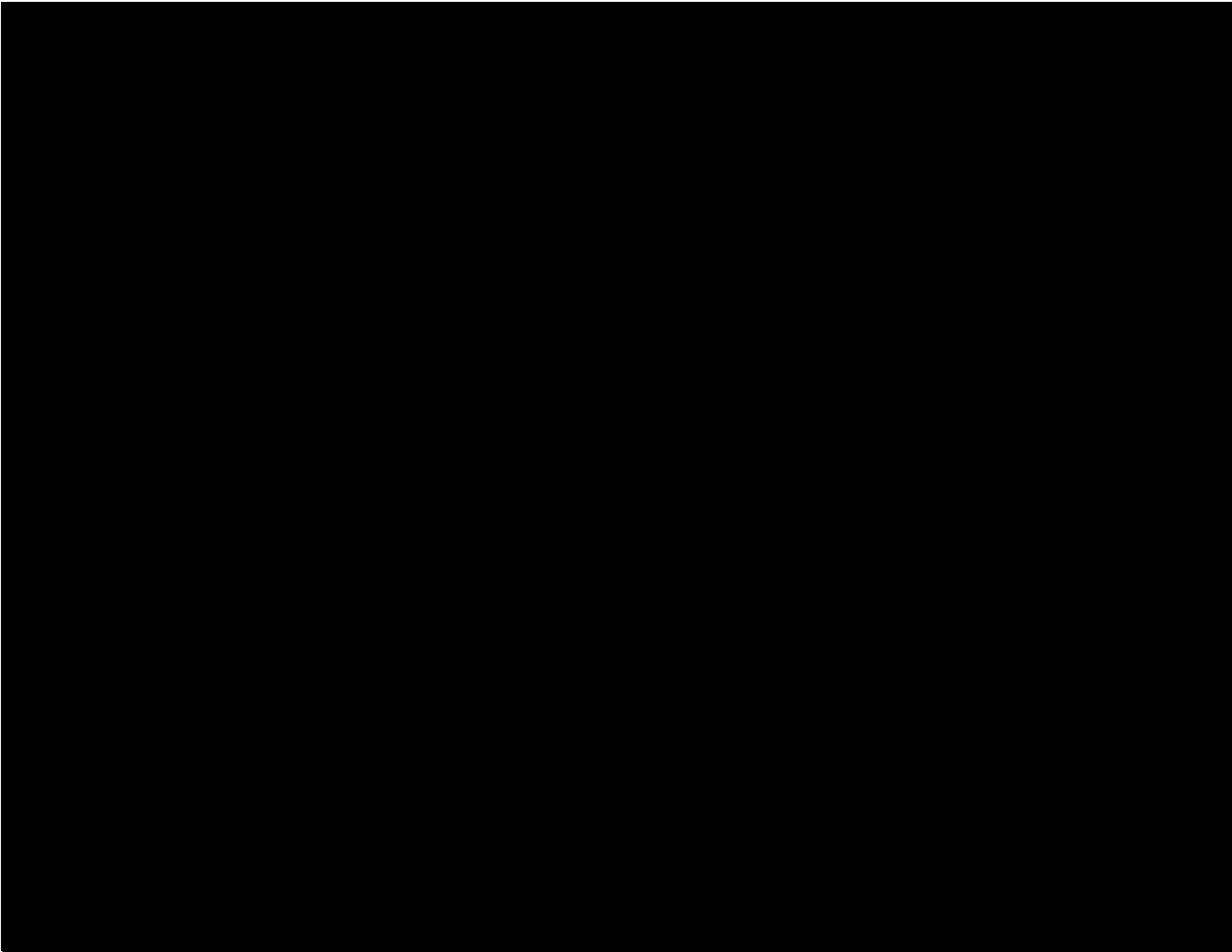


d. A VoIP Soft Phone Call Is Not “Activity On The Computer Network”

Microsoft’s proposed construction for “telephone network” is a “network for carrying telephony information.” Microsoft’s proposed construction for “computer network” is a “network for carrying digital data.” These constructions differentiate the networks based on the types of data carried on those networks. Under Microsoft’s proposed construction, a VoIP soft phone call is activity on the telephone network, not on the computer network and therefore does not meet this claim limitation.

To the extent that Microsoft attempts to obscure this fact by arguing that the user running the soft phone application on her computer is computer activity in the form of “soft phone software activity” that is monitored by the computer network, Microsoft is misapplying its own

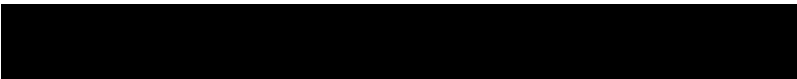
proposed constructions. (Ex. 7 (Microsoft Submission to the ITC Commission) at 55-58.)



5. ALE Does Not Indirectly Infringe The Asserted Claims Of The '439 Patent

a. There Is No Contributory Infringement Because the Accused Products Have Substantial Non-Infringing Uses

Microsoft cannot meet its burden to show contributory infringement of the accused products because the accused products have substantial non-infringing uses. Microsoft has accused a combination and specific configuration of different products as infringing the asserted patent claims. There can be no contributory infringement where the relevant product is capable of substantial non-infringing uses.



**b. Microsoft Cannot Show Induced Infringement
by ALE Because It Cannot Show Specific Intent
To Encourage Infringement By Others**

Microsoft also cannot meet its burden of proof for induced infringement. Induced infringement under 35 U.S.C. § 271(b) requires a specific intent to encourage another to infringe the patent. Merely encouraging the acts that turn out to be an infringement is not enough. The defendant must: (1) know of the patent and intend; and (2) actively encourage its infringement. *DSU Med. Corp. v. JMS Co.*, 471 F.3d 1293, 1306 (Fed. Cir. 2006) (*en banc* in relevant part). Microsoft has no evidence of the required specific intent.

**c. Microsoft Cannot Show Indirect Infringement
by ALE Because It Cannot Show Performance of
All of the Steps of the Method Claim Using the
Accused Products**

Of the asserted patent claims of the '439 Patent, claims 38, 43 and 48 recite a patented method. (See Ex. 1 ('439 Patent) at 18:1-67.) Thus, to show infringement of this method claim, Microsoft must prove that a third-party actually used the accused products in the United States to perform the functions Microsoft alleges to infringe. See *Ormco v. Align Tech, Inc.*, 469 F.3d 1299, 1310-11 (Fed. Cir. 2006). Microsoft has offered no such evidence and has not put forth any such evidence in its infringement expert report. Thus, Microsoft cannot succeed on its claim of indirect infringement of claims 38, 43, and 48 of the '439 Patent for this additional reason.

B. THE '439 PATENT IS INVALID

1. Legal Standard--Summary Judgment of Invalidity Is Appropriate Where There Is No Genuine Issue Of Material Fact

A patent is invalid for anticipation “if a single prior art reference discloses each and every limitation of the claimed invention.” *Schering Corp. v. Geneva Pharms., Inc.*, 339 F.3d 1373, 1377 (Fed. Cir. 2003); *see also* 35 U.S.C. §102(b). A claim is also invalid “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 U.S.C. § 103. Although invalidity must be proven by clear and convincing evidence, the patentee cannot simply rely upon the patent’s presumption of validity.

2. The Asserted Claim Limitations of the '439 Patent

Claim 1. [Limitation A] In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network,

[Limitation B] a system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications, the system comprising:

[Limitation C] a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and

[Limitation D] wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

[Limitation E] a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

[Limitation F] a controller to receive the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists

of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

- Claim 2. [Limitation C] The system of claim 1 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.
- Claim 9. [Limitation G] The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the controller processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during a time period other than the user-selected time period.
- Claim 21. [Limitation A] In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network,
- [Limitation B] a system for user specification of call processing in the telephone network, the system comprising:
- [Limitation C] a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing,
- [Limitation D] wherein some of the plurality of caller lists are conditioned according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;
- [Limitation E] a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the plurality of caller lists; and
- [Limitation F] a controller on the telephone network to receive an incoming call having origination data indicative of a subscriber and destination data indicating the call is designated for the user telephone, the controller accessing the plurality of caller lists in the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.
- Claim 24. [Limitation G] The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call during a user-selected time period, the controller

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

Claim 28. [Limitation A] In a system where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a computer program product for implementing a method for processing a call from a subscriber to a user over a telephone network,

[Limitation H] the computer program product comprising: a computer readable medium having computer executable instructions for performing the method, the method comprising: accepting an incoming call designated for the user telephone;

[Limitation C] accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure,

[Limitation D] wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

[Limitation B] processing the incoming call in accordance with the user-selectable criteria.

Claim 36. [Limitation G] The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the method further comprising: processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone; and blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

Claim 38. [Limitation A] In a system including a telephone network and a computer network where an originating telephone connects with a user telephone over the telephone network,

[Limitation B] a method for processing a call from the originating telephone to the user telephone according to user specifications, the method comprising:

[Limitation F] accepting an incoming call designated for the user telephone from an originating telephone of a subscriber;

[Limitation C] accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure,

[Limitation D] wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

[Limitation B] processing the incoming call of the subscriber in accordance with the user-selectable criteria.

Claim 43. [Limitation A] The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, wherein accessing a data structure further comprises using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

Claim 48. [Limitation G] The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, wherein processing the incoming call further comprises: processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone; blocking the incoming call; and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

(Ex. 1 ('439 Patent) at 14:13-18:67.)

3. Summary Judgment is Appropriate Because The Chestnut Patent Anticipates All Of The Limitations Of The Asserted Claims Of The '439 Patent

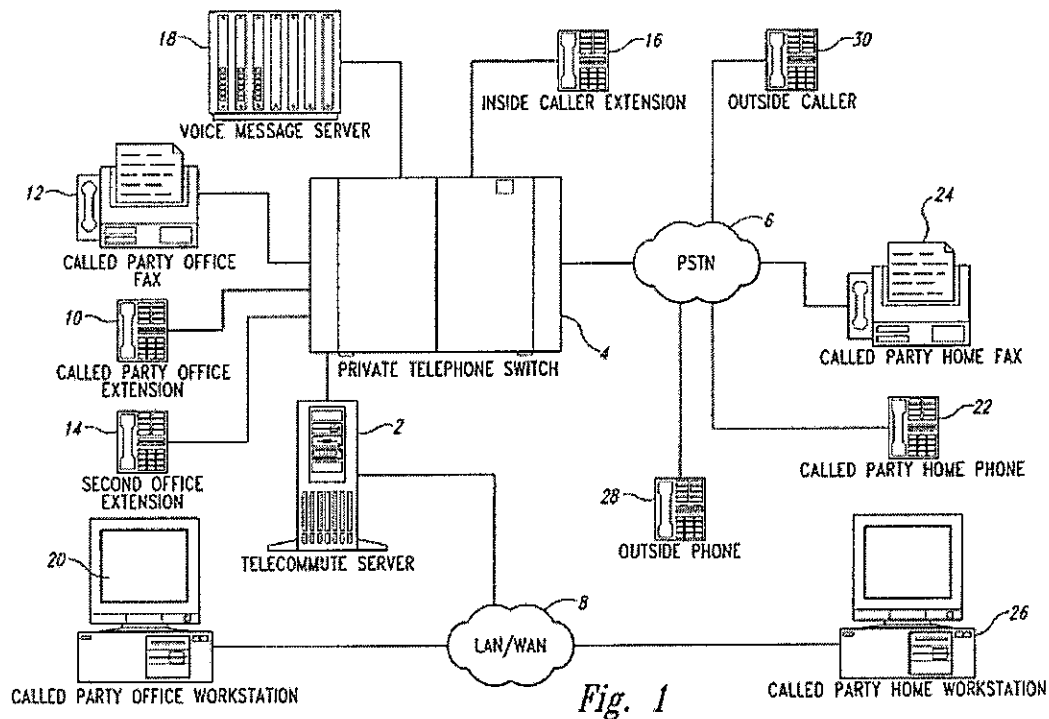
The Chestnut Patent is prior art under 35 U.S.C. 102(e) and was not considered by the Patent Office during prosecution of the '439 Patent. A patent claim is invalid as anticipated under 35 U.S.C. § 102 when a prior art reference discloses every element of the claim. *See, e.g., Dayco Prods. Inc. v. Total Containment, Inc.*, 329 F.3d 1358, 1368 (Fed. Cir. 2003).

Microsoft admits that the Chestnut Patent discloses a “ ‘telecommute server’ that is used to implement a method and system for controlling call forwarding, based upon the device used by the called party to log onto a computer network.” (Ex. 10 (Beckmann Rebuttal Report) at p. 46.) Dr. Beckmann, in his report, further explains that the Chestnut patent teaches “that if the called party was logged onto the computer network from the called party office workstation, then

the call would be directed to the called party office extension” and that “[i]f, by contrast, the called party were logged into the computer network from the called party home workstation, then the telecommute server would instruct the PBX to forward the call to called party home phone.” (*Id.*)

a. The Chestnut Patent Discloses Limitation A: Subscribers Calling A User Over The Telephone Network Where The User Telephone Is Coupled With The Telephone Network As Required By Claims 1, 21, And 38 Of The '439 Patent.

Microsoft proposes that the term “telephone network” means a “network for carrying telephony information. In Figure 1 and its accompanying description, Chestnut discloses a caller calling a called party over the PSTN (Publicly Switched Telephone Network”). (Ex. 2 (Chestnut Patent) at Fig. 1 and 4:47-50, *see also* Hyde-Thomson Decl. at ¶ 91.) The Chestnut Patent discloses a “telecommunications management system” where an outside caller 30, connected to the PSTN, makes a call through the PSTN to the called party whose phone is either connected directly to the PSTN 6 or connected to a private telephone switch 4. (*Id.*) The management system disclosed in the Chestnut Patent includes a “telecommute server” which is connected to a computer network integrated with a PBX connected to the telephone network. (*Id.*)



(Ex. 2 (Chestnut Patent) at Fig. 1.)

b. Chestnut Discloses Limitation B: A “Data Structure Contained Within A Computer Network To Store User-Selectable Criteria For Call Processing” In “Lists” Or “Caller Lists” As Required By Claims 1, 2, 21, 28, 38, and 43 of the ’439 Patent.

The Chestnut patent discloses “user-selectable criteria” and storing those criteria in lists in memory. (Hyde-Thomson Decl. at ¶¶ 92-94.) The Chestnut Patent explains that the “telecommute server 2 may either have the call forwarding preferences preprogrammed into it or the forwarding preferences may be entered by the 15 called party when he/she logs onto or off of the computer network 8.” (Ex. 2 (Chestnut Patent) at 5:13-17.) In particular the Chestnut patent states that:

The telecommute server 2, can also forward incoming calls based upon other criteria including day or date, time of day, the identity of the caller, or any preprogrammed set of rules. It is within the scope of the invention for the telecommute server 2 to utilize a set

of forwarding preferences which are based the above criteria as well as other factors such as who else in the office is logged onto the computer network 8 or the telephone extensions currently in use.

(*Id.* at 5:18-25.)

When an incoming call is received by the “telecommute server” the system identifies the called party and checks to see if calls are being forwarded. (Hyde-Thomson Decl. at ¶¶ 94, 98.) If calls are being forwarded, the system checks the telecommute server’s memory to determine the list of potential forwarding numbers. (*Id.*) That list can be based on the user-selectable criteria. (*Id.*) The Chestnut patent also states that the “telecommute server 2 selects the telephone number to which incoming calls *should be forwarded based upon a record stored in a memory* which associates a forwarding telephone number, such as the number for called party home phone 22, with a network logon device, such as called party home workstation 26.” (Ex. 2 (Chestnut Patent) at 4:64-5:2.) *See also* Hyde-Thomson Decl. at ¶ 93.

c. Chestnut Discloses Limitation C: Filtering Calls “According To Current Activity By A User On the Computer Network” As Required By Claims 1, 21, 28, and 38 Of The ’439 Patent.

The Chestnut patent discloses forwarding calls based on the user’s current status on the computer network. (Ex. 2 (Chestnut Patent) at 2:45-51, 5:18-25, 4:50-5:2.) Specifically, the Chestnut patent discloses that call forwarding will be based on the user’s current status as logged onto the computer network as well the device or location from which the user logged onto the computer network. (*Id.*) The Chestnut patent expressly states that if “calls are being forwarded, then a list of potential forwarding numbers will be determined 68. The list of potential forwarding numbers can be based on one or more preprogrammed criteria, including *the identity of the called party’s current or most recent network logon device.*” (*Id.* at 6:67-7:4.) The Chestnut patent also states that:

When an outside caller 30 places a call on the PSTN 6 the call is directed to the called party office extension 10 by the private branch exchange 4. Before the PBX sends the call to the called party office extension 10, *the telecommute server 2 checks the computer network 8 to see if the called party is logged on. If the called party is logged on, the telecommute server 2 instructs the private branch exchange 4 to forward the call to the telephone extension associated with the device the called party has used to log onto the computer network 8.*

(*Id.* at 4:48-57.)

The Chestnut patent discloses this limitation under Microsoft's construction of the term as well because whether and where a user is logged on to a computer network constitutes the user's status on the computer network. (*See also* Hyde-Thomson Decl. at ¶¶ 92-95.)

d. Chestnut Discloses Limitation D: A "Computer Network Access Port" As Required By Claims 1 And 21 Of The '439 Patent

In Chestnut, the "telecommute server" is connected to both the telephone network and the computer network and is part of both networks. (Ex. 2 (Chestnut Patent) at Fig. 1 and 4:36-39.) The Chestnut Patent states that Figure 1 "shows the telecommute server 2 *connected to a computer network 8* and a private telephone switch (private branch exchange (PBX)) 4 which in turn is *connected to a Publicly Switched Telephone Network (PSTN) 6.*" (*Id.*) Chestnut discloses CTI applications which act as an interface between the telephone network and the computer network. (Ex. 2 (Chestnut Patent) at 4:64-5:2, 2:24-51, *see also* Hyde-Thomson Decl. at ¶ 97.)

e. Chestnut Discloses Limitation E: A "Controller" As Required By Claims 1, 21, and 38 Of The '439 Patent.

The Chestnut patent discloses the controller limitation of claims 1, 21, and 38. The Chestnut patent states that telecommute server receives an incoming call and "selects the telephone number to which incoming calls should be forwarded based upon a record stored in

memory which associates a forwarding telephone number, such as the number for the called party home phone 22, with a network logon device, such as called party home workstation 26.” (*Id.* at 4:64-5:2.) In the related ITC matter, Mr. Hyde-Thomson explained that in the Chestnut patent, the “controller is physically embodied in the Telecommute Server hardware and under control of appropriate software.” (Ex. 9 (Hyde-Thomson ITC Hrg Tr.) at 1423:18-20, *see also* Hyde-Thomson Decl. at ¶¶ 98-99.)

f. Chestnut Discloses Limitation F: “Permission To Process the Incoming Call During User-Selected Time Period” And “Blocking The Incoming Call ... During Time Periods Other Than The User-Selected Time Period” As Required By Claims 9, 24, 36, and 48 of the ‘439 Patent.

The Chestnut discloses using “origination data” to route an incoming call. (Ex. 2 (Chestnut Patent) at 1:47-51 (“CTI applications deliver caller ID, automatic number identification (ANI), dialed number identification services (DNIS), and interactive voice response (IVR) dialed digits, such as a customer’s account number, to a software application.”).) In addition, Chestnut discloses blocking an incoming call based on user settings. (*Id.* at 2:46-61 (“Call forwarding based on computer logon may be further scheduled so that calls are forwarded to different telephone lines associated with telephones or voice messaging systems depending upon a predefined schedule.”).) (*See also* Hyde-Thomson Decl. at ¶ 100.)

g. The Chestnut Patent Discloses Limitation G: A “Computer Program Product”

Claim 28 of the ‘439 patent recites “a computer program product for implementing a method for processing a call from a subscriber to a user over a telephone network.” The Chestnut patent discloses a “method and device for managing a telecommunications system, including call forwarding, with a computer network (LAN, WAN, etc.) integrated with a private branch exchange (PBX) connected to a Public Switched Network (PSTN).” (Ex. 2 (Chestnut

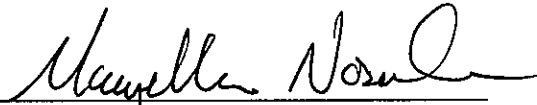
Patent) at Abstract.) The Chestnut patent further states that the “present invention also includes a call progress manager which *controls the protocols used to forward a call* depending upon where the call originated and where it was forwarded to.” (*Id.* at 3:43-46.)

The claim language of the '439 Patent only requires that there be software instructions *for* performing the method as opposed to software *that performs* the method. The '439 Patent discloses a central office switch comprised of hardware to perform many of the functions recited in claim 28. (Ex. 1 ('439 Patent) at 6:55-7:15.) It also shows a call filtering processor for performing these functions. (*Id.* at 11:1-34.) Neither of these hardware components are described explicitly to include software for performing the functions, much less that the call receipt and processing functions as specified in claim 28 are performed completely in software. The claim language of the '439 Patent, therefore, does not require that all of the steps of the claimed method be performed by software. At the hearing in the related ITC matter, Mr. Hyde-Thomson explained that the Chestnut patent discloses a computer program product. (Ex. 9 (Hyde-Thomson ITC Hrg Tr.) at 1399:6-12, *see also* Hyde-Thomson Decl. at ¶ 101.)

CONCLUSION

For the foregoing reasons, ALE respectfully requests that the Court grant ALE's motion and enter summary judgment on non-infringement and invalidity of U.S. Patent No. 6,421,439.

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May 9, 2008

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EXHIBIT 1



US006421439B1

(12) **United States Patent**
Liffick

(10) **Patent No.:** **US 6,421,439 B1**
(45) **Date of Patent:** **Jul. 16, 2002**

(54) **SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK**

(75) **Inventor:** **Stephen Mitchell Liffick**, Seattle, WA (US)

(73) **Assignee:** **Microsoft Corporation**, Redmond, WA (US)

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) **Appl. No.:** **09/275,689**

(22) **Filed:** **Mar. 24, 1999**

(51) **Int. Cl.:** **H04M 3/42; G06F 9/46**

(52) **U.S. Cl.:** **379/211.02; 379/201.02; 709/328**

(58) **Field of Search:** **379/201.01, 201.02, 379/201.03, 188, 196, 197, 198, 199, 200, 210.02, 210.03, 211.01, 211.02, 900; 370/352; 709/311, 312, 320, 328**

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Primary Examiner—Ahmad F. Matar

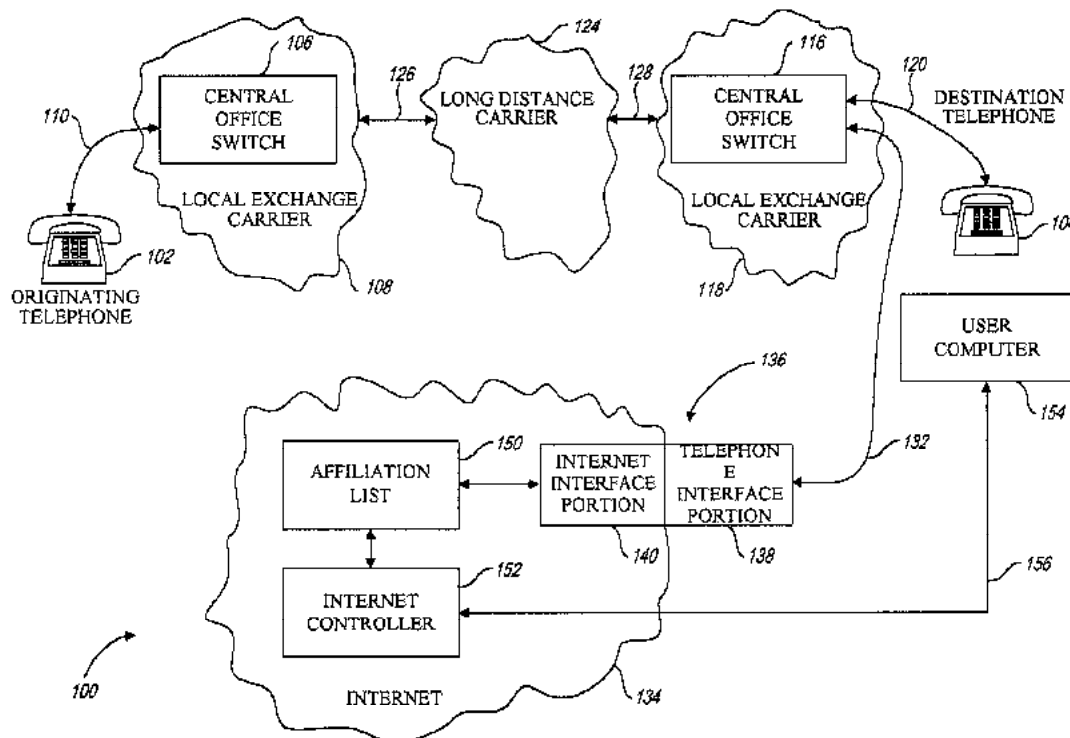
Assistant Examiner—Benny Q. Tieu

(74) *Attorney, Agent, or Firm*—Workman, Nydegger, Seeley

(57) **ABSTRACT**

A telecommunication system combines telephone technology and Internet technology to establish one or more user-specified affiliation lists. The affiliation lists are stored on the Internet and are accessible by the user and by the telecommunication portion of the system. The affiliation lists are used to process incoming calls to the user's destination telephone number. A central office switch receives the call being directed to the destination telephone number and uses a communication link with the Internet to access the user's affiliation lists. The incoming call is processed in accordance with the user-specified rules in the affiliation lists. The user may accept all incoming calls, no incoming calls, or incoming calls only from specified parties. The call processing rules may be readily edited by the user and can also include alternative call processing rules that vary in accordance with the time of day or with the user's personal desires.

51 Claims, 8 Drawing Sheets



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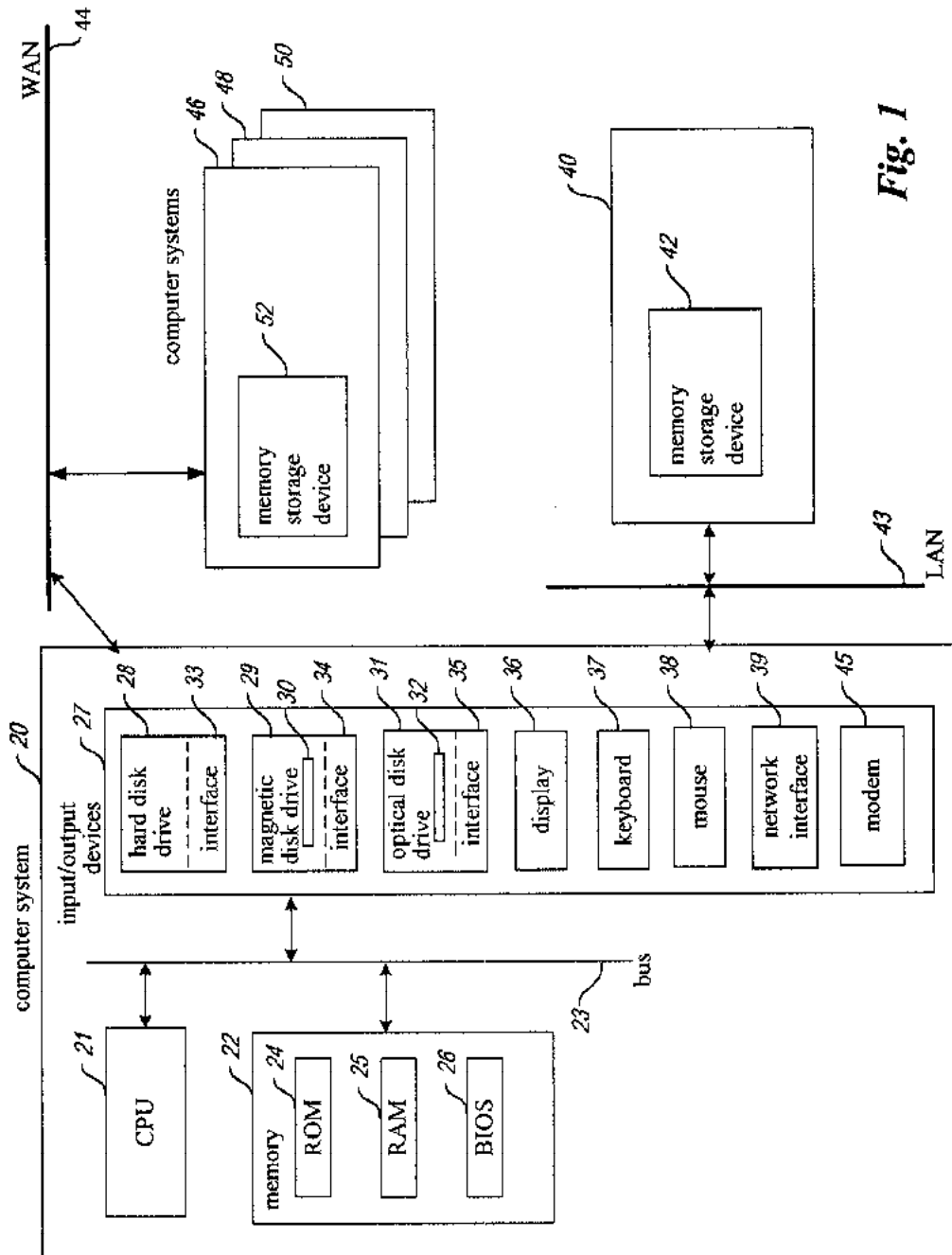


Fig. 1

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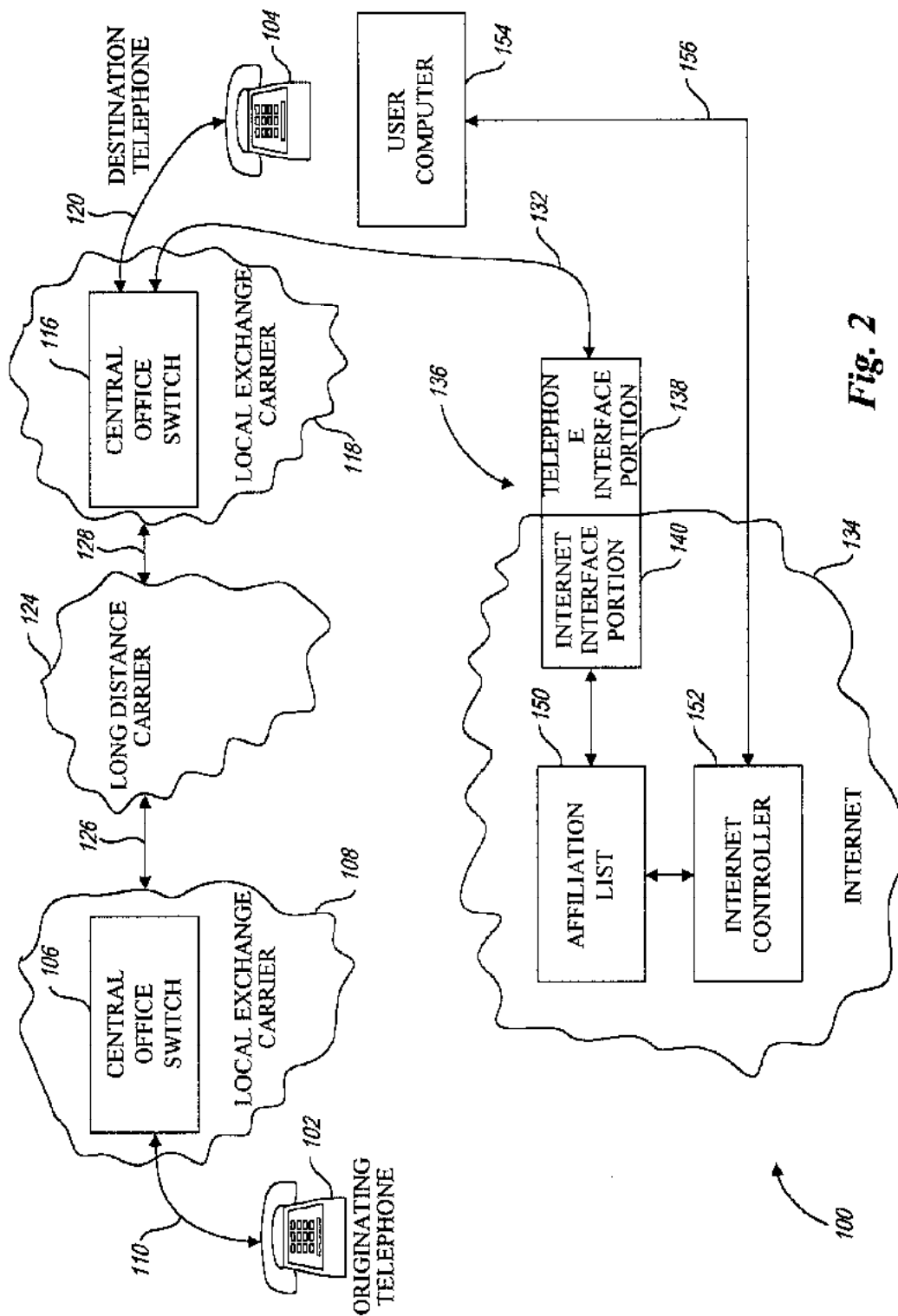


Fig. 2

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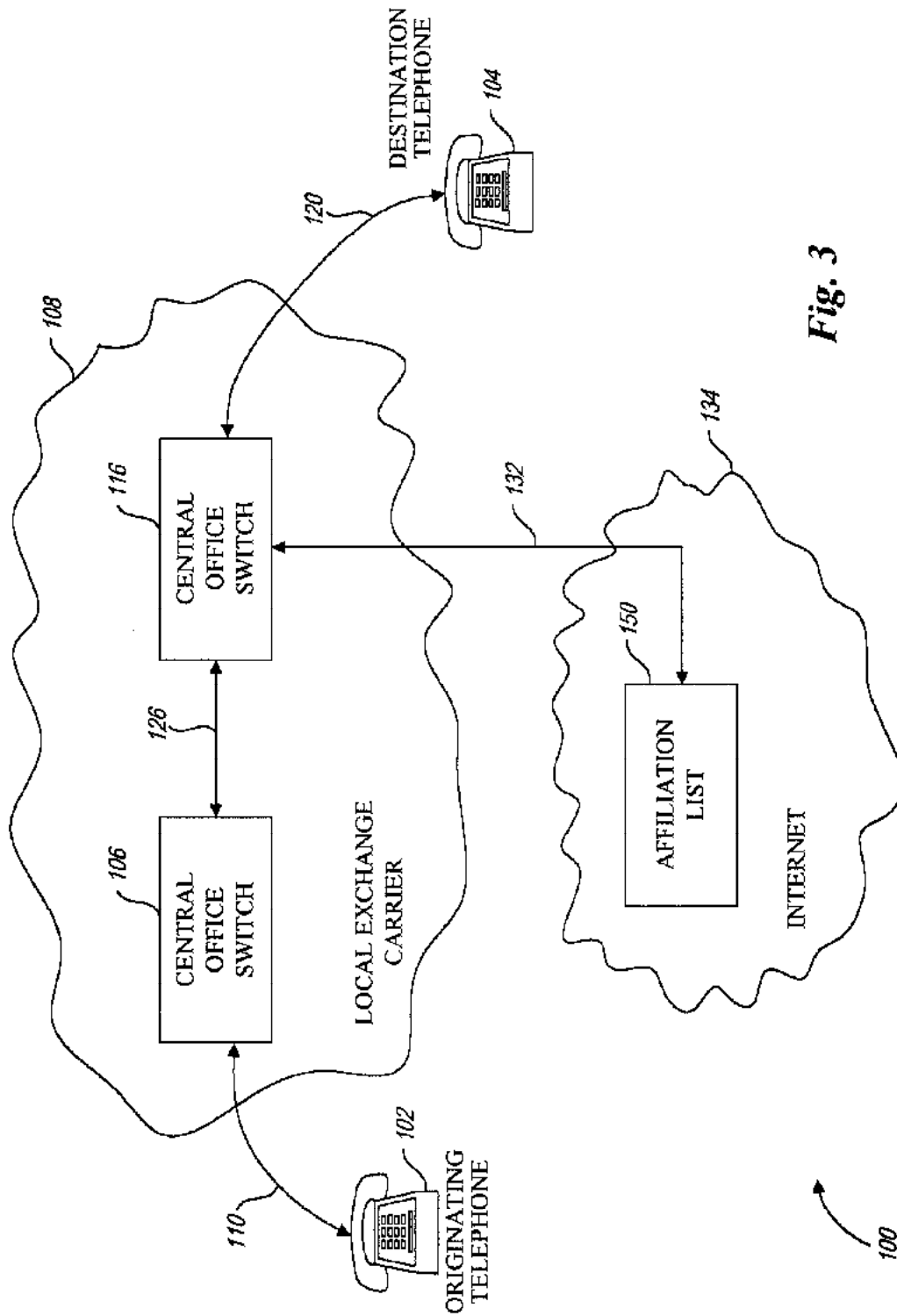


Fig. 3

U.S. Patent

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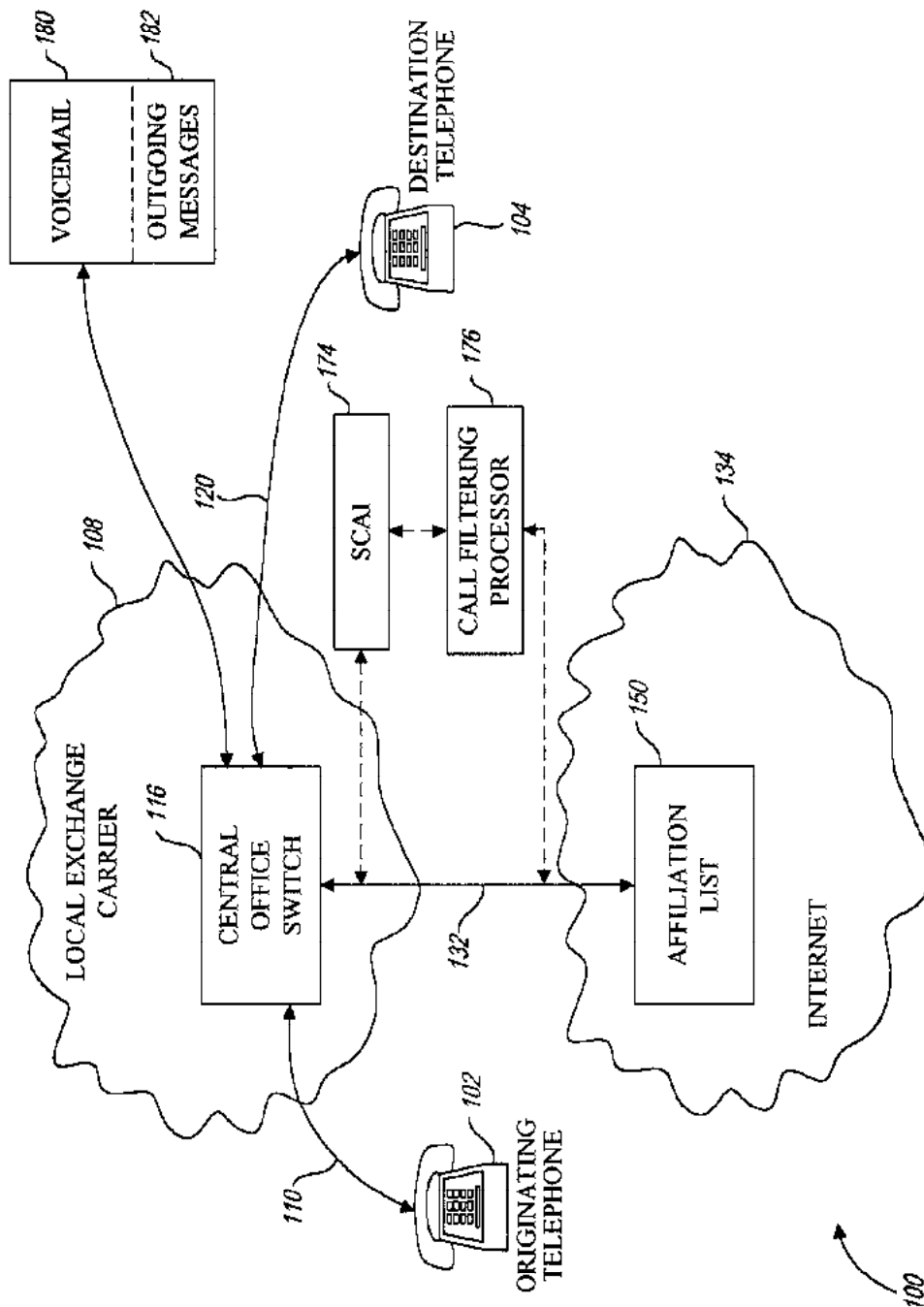


Fig. 4

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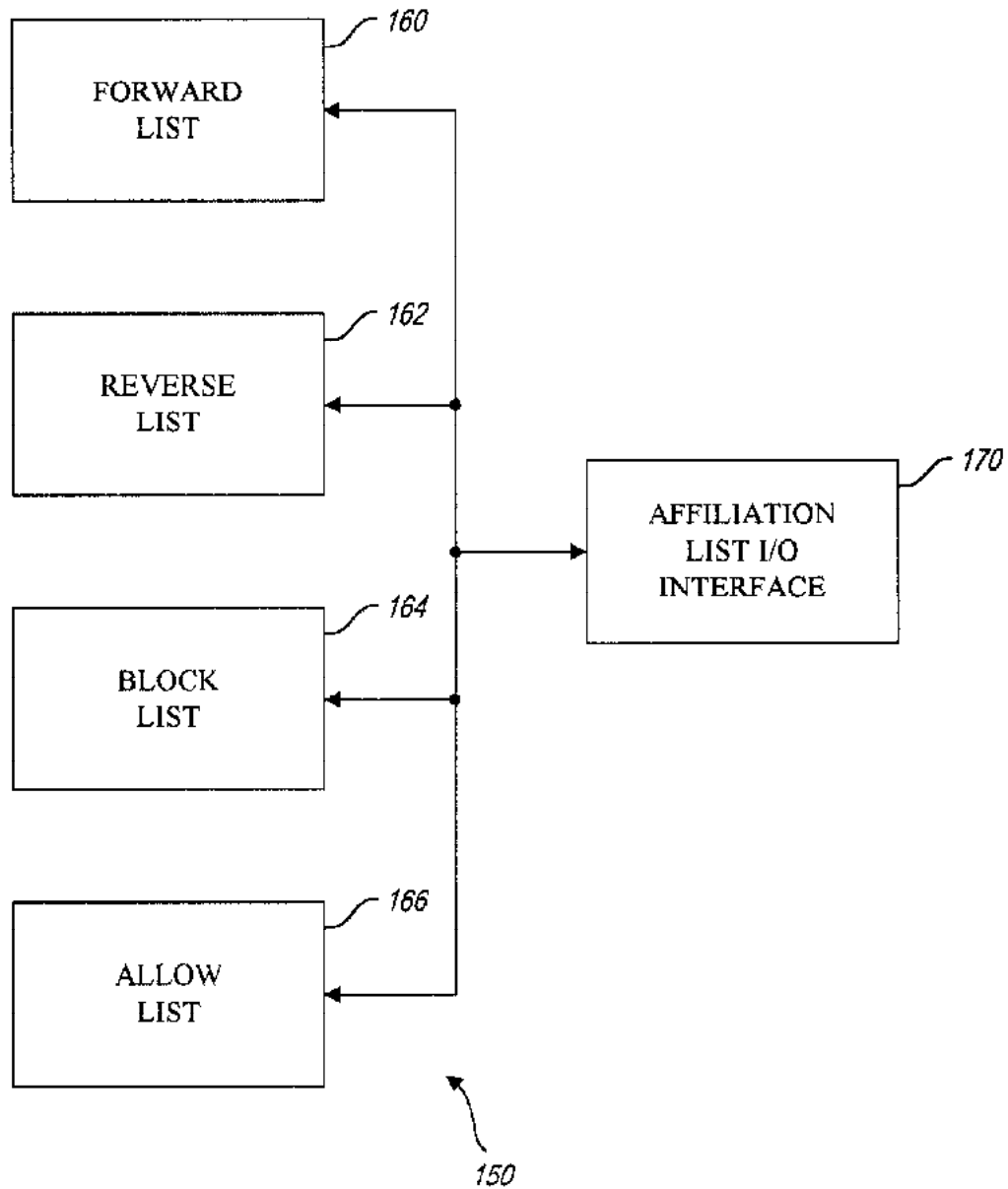


Fig. 5

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US 6,421,439 B1

Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
.	
.	
.	
.	
.	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
.	
.	
.	
.	
.	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239

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Fig. 6

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Name	Bob Smith
Subscriber Name	bobxyz@msn.com
Phone 1	(425) 555-1234
Phone 2	(425) 555-1235
Status	Allowed
:	
:	
:	
Name	Jim Smith
Subscriber Name	NONE
Phone 1	(206) 555-1236
Status	Blocked
:	
:	
:	
Name	John Adams
Subscriber Name	johnxyz@aol.com
Email Alias	atom smasher xyz
Phone 1	(703) 555-1237
Phone 2	(703) 555-1238
Phone 3	(703) 555-1239
Status	Conditional
Phone 1	- Allowed
Phone 2	- Allowed 9:00 a.m. - 11:30 a.m.
Phone 3	- Blocked

150

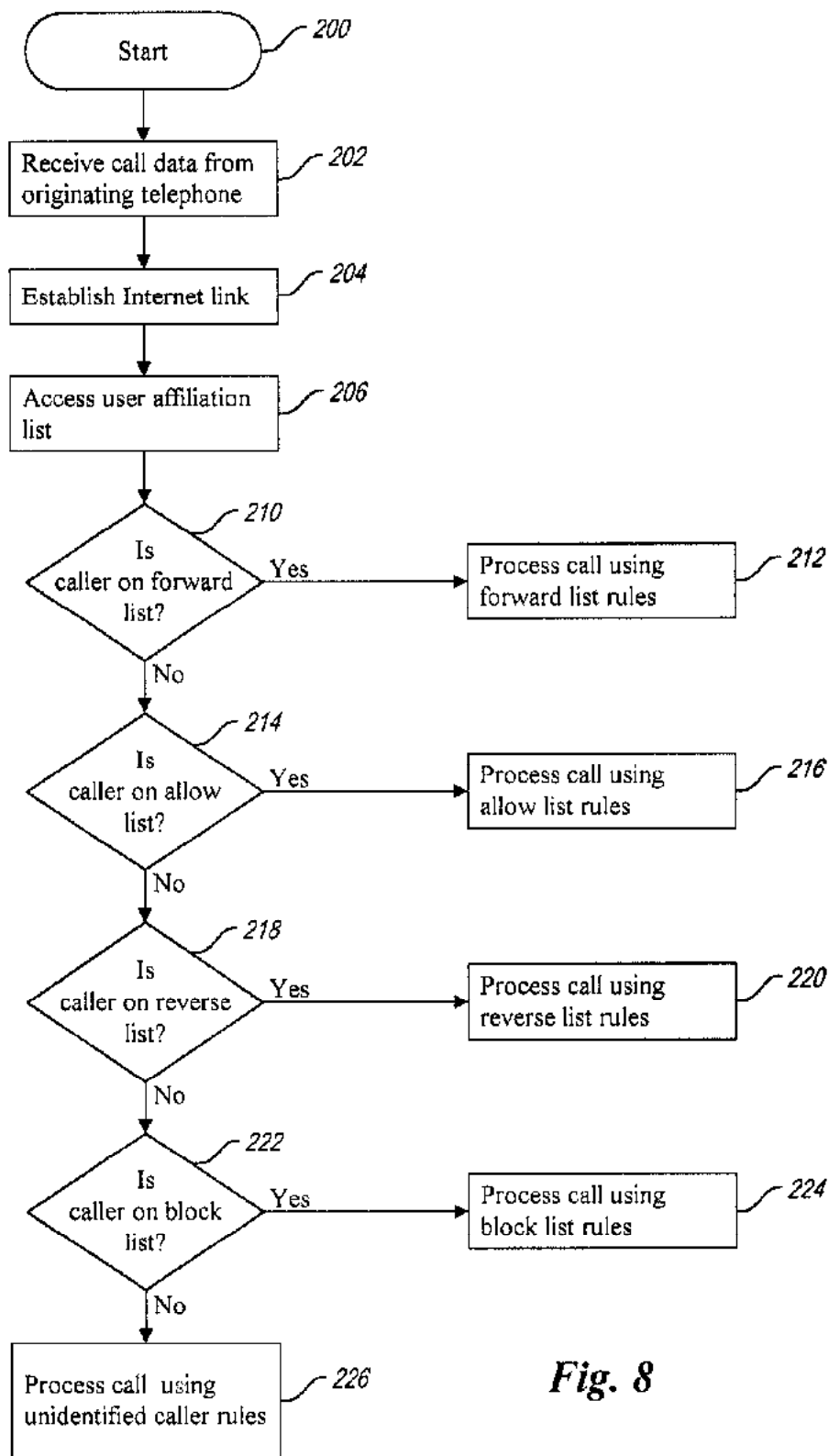
Fig. 7

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*Fig. 8*

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1

SYSTEM AND METHOD FOR USER AFFILIATION IN A TELEPHONE NETWORK

TECHNICAL FIELD

The present invention is directed generally to telecommunications and, more particularly, to a system and method for user selection of individual affiliations in a telephone network.

BACKGROUND OF THE INVENTION

Advances in telecommunication technology provide a user with a broad variety of communication options. For example, advances in telephone communication, including wireless telephone and cellular telephone, allow almost instantaneous communication between virtually any two locations on earth. Telephone service providers typically offer wide range of options, such as voice mail, caller identification, call waiting, call forwarding, three-way calling, and the like. The telephone service subscriber can customize their own telecommunications service with the selection of one or more options.

Despite these advances, the user is still limited in determining with whom the user wishes to speak and when the user wishes to speak with certain parties or, at the user's option, not speak with certain parties. Although caller identification (ID) can identify the calling party, caller ID does not always correctly identify the caller. For example, if the number identification data is not transmitted along with the call, the caller ID device indicates that caller data is "unavailable." In addition, the user must still respond to the ringing telephone and view the caller identification box to determine whether or not to answer the telephone. Thus, existing telephone technologies do not always provide user with the desired degree of control over incoming calls.

Therefore, it can be appreciated that there is a significant need for system and method to control incoming calls to a user's telephone. The present invention provides this and other advantages as will be apparent from the following detailed description and accompanying figures.

SUMMARY OF THE INVENTION

A system to specify user-selectable criteria for call processing is implemented on a conventional telephone system, such as a public switched telephone network (PSTN). The user-specified call processing criteria is stored on a network that is accessible by the user for data entry and/or editing, and is also accessible by the PSTN to determine whether call processing criteria exists for the particular caller. The Internet provides a readily available data structure for storage of the user-selectable call processing criteria. The user can establish a database stored on the Internet in association with the user's telephone number and indicating the user-selectable call processing criteria for one or more potential callers.

The caller may be identified by caller identification data, such as automatic number identification (ANI). Based on the destination telephone number and the caller identification data, the PSTN accesses the Internet and examines an affiliation list corresponding to the destination telephone number. If the caller identification data is present in the affiliation list, the call may be processed in accordance with the user-specified criteria for that particular caller.

The user (i.e., the called party) can specify user-selectable call processing criteria for all incoming calls, incoming calls from selected callers, and may further apply conditional

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criteria based on user preferences. For example, the user may select all calls during certain times of the day, calls from selected parties during other specified times of the day, and no calls during other times of the day. The user-selectable call processing criteria may be readily edited by the user and may be applied to multiple phone numbers associated with a particular caller.

The system may be readily implemented on current telephone systems with no significant modifications. For example, the system may apply the user-specified call processing criteria at the central office switch to which the destination telephone is coupled. All call processing prior to arrival at that central office switch is performed in accordance with conventional telecommunication techniques and standards. When a call arrives at the central office switch coupled to the destination telephone, the central office switch does not immediately establish a communication link with the destination telephone, but accesses the user-specified call processing criteria on the Internet and applies the call processing criteria. If the call is allowed, the central office switch establishes a communication link with the destination telephone in a conventional fashion to complete the telephone call. If the call is not allowed, the central office switch will not process the call, and may generate a busy signal to indicate that the user is unavailable.

The system may also be implemented at other points in the telecommunication network, such as a central office switch at the originating telephone. In addition, the user-specified call processing criteria may be stored on other forms of networks that are accessible to both the user (i.e., the called party) and the telecommunication system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates a computer system that includes components to implement the system of the present invention.

FIG. 2 is a functional block diagram outlining the operation of the present invention.

FIG. 3 is a functional block diagram of an alternate telecommunications configuration implementing the present invention.

FIG. 4 is a functional block diagram of another alternative telecommunications configuration implementing the present invention.

FIG. 5 is a functional block diagram providing details of the affiliation list of the system of FIG. 2.

FIG. 6 illustrates sample data provided in the list of FIG. 5.

FIG. 7 illustrates additional sample data provided in the list of FIG. 3.

FIG. 8 is a flowchart illustrating the operation of the system of FIG. 2.

DETAILED DESCRIPTION OF THE INVENTION

Existing telephone technology does not provide the telephone subscriber with a technique for controlling access to the user's telephone. Features such as caller ID identify the caller, but do not control access to the user's telephone. Thus, the conventional telephone system forwards the user to extreme options. The user may answer all incoming calls or may choose not to answer any incoming calls. However, the present invention provides selective options in between these two extremes. The present invention combines telephone technology with Internet technology to allow the user to "filter" incoming calls based on user-selected criteria. In

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particular, the user may establish a series of lists, stored on the Internet in association with the user's telephone, to filter incoming calls and thereby control access to the user's telephone.

FIG. 1 and the following discussion are intended to provide a brief, general description of a suitable computing environment in which the invention may be implemented. Although not required, the invention will be described in the general context of computer-executable instructions, such as program modules, being executed by a personal computer. Generally, program modules include routines, programs, objects, components, data structures, etc. that perform particular tasks or implement particular abstract data types. Moreover, those skilled in the art will appreciate that the invention may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, network PCs, minicomputers, mainframe computers, and the like. The invention may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices.

With reference to FIG. 1, an exemplary system for implementing the invention includes a general purpose computing device in the form of a conventional personal computer 20, including a processing unit 21, a system memory 22, and a system bus 23 that couples various system components including the system memory to the processing unit 21. The system bus 23 may be any of several types of bus structures including a memory bus or memory controller, a peripheral bus, and a local bus using any of a variety of bus architectures. The system memory 22 includes read only memory (ROM) 24 and random access memory (RAM) 25. A basic input/output system 26 (BIOS), containing the basic routines that helps to transfer information between elements within the personal computer 20, such as during start-up, may be stored in ROM 24.

The personal computer 20 further includes input/output devices 27, such as a hard disk drive 28 for reading from and writing to a hard disk, not shown, a magnetic disk drive 29 for reading from or writing to a removable magnetic disk 30, and an optical disk drive 31 for reading from or writing to a removable optical disk 32 such as a CD ROM or other optical media. The hard disk drive 28, magnetic disk drive 29, and optical disk drive 31 are connected to the system bus 23 by a hard disk drive interface 33, a magnetic disk drive interface 34, and an optical drive interface 35, respectively. The drives and their associated computer-readable media provide nonvolatile storage of computer readable instructions, data structures, program modules and other data for the personal computer 20. Although the exemplary environment described herein employs a hard disk, a removable magnetic disk 30 and a removable optical disk 32, it should be appreciated by those skilled in the art that other types of computer readable media which can store data that is accessible by a computer, such as magnetic cassettes, flash memory cards, digital video disks, Bernoulli cartridges, random access memories (RAMs), read only memories (ROM), and the like, may also be used in the exemplary operating environment. Other I/O devices 27, such as a display 36, keyboard 37, mouse 38, and the like may be included in the personal computer 20 and function in a known manner. For the sake of brevity, other components, such as a joystick, sound board and speakers are not illustrated in FIG. 1.

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The personal computer 20 may also include a network interface 36 to permit operation in a networked environment using logical connections to one or more remote computers, such as a remote computer 40. The remote computer 40 may be another personal computer, a server, a router, a network PC, a peer device or other common network node, and typically includes many or all of the elements described above relative to the personal computer 20, although only a memory storage device 42 has been illustrated in FIG. 1. The logical connections depicted in FIG. 1 include a local area network (LAN) 43 and a wide area network (WAN) 44. Such networking environments are commonplace in offices, enterprise-wide computer networks, intranets and the Internet.

When used in a LAN networking environment, the personal computer 20 is connected to the LAN 43 through the network interface 39. When used in a WAN networking environment, the personal computer 20 typically includes a modem 45 or other means for establishing communications over the wide area network 44, such as the Internet. The modem 45, which may be internal or external, permits communication with remote computers 46-50. In a networked environment, program modules depicted relative to the personal computer 20, or portions thereof, may be stored in the remote memory storage device 42 via the LAN 51 or stored in a remote memory storage device 52 via the WAN 44. It will be appreciated that the network connections shown are exemplary and other means of establishing a communications link between the computers may be used.

The present invention is embodied in a system 100 illustrated in the functional diagram of FIG. 2. In a typical telephone communication, an originating telephone 102 is operated by a calling party to place a call to a destination telephone 104. The originating telephone generates signals that are detected by a central office switch 106 operated by a local exchange carrier (LEC) 108. The LEC 108 is the telephone service provider for the calling party. The originating telephone 102 is coupled to the central office switch 106 via a communication link 110. As those skilled in the art can appreciate, the communication link 110 may be a hard-wired connection, such as a fiber optic, copper wire, or the like. Alternatively, the communication link 110 may be a wireless communication link if the originating phone 102 is a cellular telephone or some other form of wireless telephone.

Similarly, the destination telephone 104 is coupled to a central office switch 116 operated by a local exchange carrier (LEC) 118. The destination telephone 104 is coupled to the central office switch 116 via a communication link 120. The communication link 120 may be a hard-wired communication link or a wireless communication link, as described above with respect to the communication link 110. The present invention is not limited by the specific form of communication link or central office switch.

The LEC 108 establishes a communication link with the LEC 118. As illustrated in FIG. 2, the communication link between the LEC 108 and the LEC 118 is through a long distance carrier (LDC) 124. The LEC 108 establishes a communication link 126 with the LDC 124 which, in turn, establishes a communication link 128 with the LEC 118. If the telephone call from the originating telephone 102 to the destination telephone 104 is not a long distance call, the LDC 124 is not required. In this case, the communication link 126 may couple the LEC 108 directly to the LEC 118. The use of the system 100 with other telephone configurations are illustrated in other figures.

To place a telephone call, the calling party activates the originating telephone 102 to dial in the telephone number

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corresponding to the destination telephone number 104, thereby establishing the communication link 110 with the central office switch 106. In true, the central office switch 106 establishes the communication link 126 (via the LDC 124, if necessary), thus establishing a communication link with the central office switch 116. In a conventional telephone system, the central office switch 116 establishes the communication link 120 to the destination telephone 104 causing the destination telephone to ring. If the subscriber picks up the destination telephone, a complete communication link between the originating telephone 102 and the destination telephone 104 has been established. This is sometimes referred to as "terminating" the telephone call. The specific telecommunications protocol used to establish a telephone communication link between the originating telephone 102 and the destination telephone 104 is well known in the art and need not be described herein. The preceding description of techniques used to establish the telephone communication link are provided only as a basis for describing the additional activities performed by the system 100.

With the system 100, the central office switch 116 does not initially establish the telephone communication link 120 with the destination telephone 104 to cause the telephone to ring. Instead, the central office switch 116 establishes a communication link 132 with a computer network 134, such as the Internet. As those skilled in the art can appreciate, the Internet is a vast multi-computer network coupled together by data links having various communication speeds. Although the Internet 134 may use a variety of different communication protocols, a well-known communication protocol used by the Internet is a Transmission Control Protocol/Internet Protocol (TCP/IP). The transmission of data on the Internet 134 using the TCP/IP is known to those skilled in the art and need not be described in greater detail herein.

The central office switch 116 utilizes conventional telephone communication protocols, which may be different from the TCP/IP communication protocols used by the Internet 134. The system 100 includes a communication interface 136 to translate data between the two communication protocols. The communication interface 136 includes a telephone interface portion 138 and an Internet interface portion 140. The telephone interface portion 138 is coupled to the central office switch 116 via the communication link 132 such that communications occurring on the communication link 132 utilize the telephone communication protocol. The Internet interface portion 140 communicates via the Internet using conventional communication protocols, such as TCP/IP.

The communication interface 136 may be implemented on a computing platform that functions as a server. The conventional components of the computing platform, such as a CPU, memory, and the like are known to those skilled in the art and need not be described in greater detail herein. The telephone interface portion 138 may comprise an Integrated Services Digital Network (ISDN) Primary Rate Interface (PRI) to communicate with the central office switch 116. The ISDN PRI, which may be implemented on a plug-in computer card, provides information to the telephone interface portion 138, such as automatic number identification (ANI), dialed number identification service (DNIS), and the like. As is known, ANI provides the telephone number of the caller's telephone (e.g., the originating telephone 102) while the DNIS allows the number the caller dialed (e.g., the destination telephone 104) to be forwarded to a computer system. These data may be con-

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sidered "keys" which may be used by the system 100 to identify the caller and the callee. Thus, the central office switch 116 provides information which may be used to access the affiliation list 150 for the destination telephone 104.

The Internet interface portion 140 may be conveniently implemented with a computer network card mounted in the same computing platform that includes the ISDN PRI card. However, it is not necessary for satisfactory operation of the system 100 that the interface cards be co-located in the same computing platform. It is only required that the telephone interface portion 138 communicate with the Internet interface portion 140. The Internet interface portion 140 receives the incoming data (e.g., the ANI, DNIS, and the like) and generates Internet compatible commands. The specific form of the Internet commands using, by way of example, TCP/IP, are within the scope of knowledge of one skilled in the art and need not be described herein. As will be described below, data provided by the central office switch 116 will be used to access data on the Internet and use that data to determine the manner in which a telephone call will be processed.

The Internet 134 stores an affiliation list 150, which may be established by the user of the destination telephone 104. Data stored within the affiliation list 150 is accessed by the central office switch 116 to determine the manner in which the call from the originating telephone 102 will be processed. Details of the affiliation list 150 are provided below. The Internet 134 also includes an Internet controller 152 which communicates with a user computer 154 via a network link 156. The communication between the user computer 154 and the Internet 134 is a conventional communication link used by millions of computers throughout the world. For example, the user computer 154 may be a personal computer (PC) containing a communication interface, such as a modem (not shown). The network link 156 may be a simple telephone communication link using the modem to communicate with the Internet 134. The Internet controller 152 functions in a conventional manner to communicate with the user computer 154 via the network link 156. Although the communication link 132 and the network link 156 are both communication links to the Internet, the network link 156 is a conventional computer connection established over a telephone line, a network connection, such as an Ethernet link, or the like. This conventional network link 156 is significantly different from the communication link 132 between the central office switch 116 and the Internet 134. The central office switch 116 establishes the communication link 132 to access data on the Internet and uses that accessed data to determine how to process an incoming call for the destination telephone 104. The network link 156 is a computer-to-computer connection that may simply use a telephone as the physical layer to establish the network link.

In the system 100, the central office switch 116 receives an incoming call from the originating telephone 102 via the central office switch 106 and, optionally, the LDC 124. Rather than immediately establishing the communication link 120 and generating a ring signal at the destination telephone 104, the central office switch 116 establishes the communication link 132 and communicates with the Internet 134 via the communication interface 136. The purpose of such communication is to access the affiliation list 150 and thereby determine the manner in which the user of the destination telephone 104 wishes calls to be processed.

FIG. 3 illustrates the system 100 for a telephone system configuration in which the originating telephone 102 and the

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destination telephone 104 are both serviced by the same local exchange carrier 108. The originating telephone 102 establishes the communication link 110 with the central office switch 106 in the manner described above. The central office switch 106 establishes the communication link 126 directly with the central office switch 116 without the need for the LDC 124 (see FIG. 2). The central office switch 116 operates in the manner described above. That is, the central office switch 116 does not immediately establish the communication link 120, but does establish the communication link 132 with the Internet 134. For the sake of simplicity, FIG. 3 does not illustrate the communication interface 136. However, those skilled in the art will appreciate that the central office switch 116 accesses the affiliation list 150 via the communication interface 136 (see FIG. 2).

For the sake of simplicity, FIG. 3 also does not show the Internet controller 152 and the user computer 154. However, those skilled in the art can appreciate that those portions of the system may also be present in the embodiment illustrated in FIG. 3. However, it should be noted that the user computer 154 and the Internet controller 152 need only be used to edit the affiliation list 150. The call processing by the central office switch 116 does not depend on the presence of the Internet controller 152 or the user computer 154. That is, the central office switch 116 accesses the affiliation list 150 via the communication interface 136 regardless of the presence of the user computer 154.

In yet another telephone system configuration, illustrated in FIG. 4, the originating telephone 102 and the destination telephone 104 are not only serviced by the same local exchange carrier 108, but are connected to the same central office switch 116. However, the fundamental operation of the system 100 remains identical to that described above with respect to accessing the affiliation list 150. That is, the originating telephone 102 establishes the communication link 110 with the central office switch 116. However, the central office switch 106 need not establish the communication link 126 with any other central office switch since the destination telephone 104 is also connected to that same central office switch.

In this telephone system configuration, the central office switch 116 accesses the affiliation list 150 on the Internet 134 via the communication link 132 (see FIG. 2) in the manner described above. For the sake of simplicity, FIG. 4 does not illustrate the communication interface 136. However, those skilled in the art will recognize that the communication interface 136 operates to convert communication signals between telephone protocol used by the central office switch 106 and the Internet communication protocol used by the Internet 134. In addition, FIG. 4 also does not illustrate the Internet controller 152 and the user computer 154. As noted above with respect to FIG. 3, the Internet controller 152 and user computer 154 are not necessary for proper operation of the system 100. The user computer 154 is typically used in the system 100 to edit the affiliation list 150.

The affiliation list 150 is illustrated in greater detail in the functional block diagram of FIG. 5. The affiliation list comprises a series of sublists, illustrated in FIG. 3 as a forward list 160, a reverse list 162, a block list 164, and an allow list 166. The forward list 160 contains a list of Internet subscribers whose Internet activity a user wishes to monitor. This list is sometimes referred to as a "buddy" list. When the user operates the user computer 154 on the Internet 134, the Internet controller 152 accesses the forward list 160 via an affiliation list input/output (I/O) interface 170 to determine which Internet subscribers contained within the forward list

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are currently active on the Internet 134. In conventional Internet operation, the Internet controller 152 sends a message to the user computer 154 indicating which Internet subscribers on the forward list 160 are currently active on the Internet 134.

The forward list 160 is a list of Internet subscribers whose activity is reported to the user. Other Internet subscribers may have their own forward list (not shown) and may monitor the Internet activity of the user. When the user accesses the Internet 134 with the user computer 154, that activity can be monitored by others. With the system 100, it is possible to determine who is monitoring the user's Internet activity. The reverse list 162 contains a list of Internet subscribers who have placed the user in their forward list. That is, the reverse list 162 contains a list of Internet subscribers who have placed the user in their buddy list. With the reverse list 162, the user can determine who is monitoring his Internet activity.

The block list 164 contains a list of Internet subscribers that the user does not want to monitor his Internet activity. That is, the user's Internet activity will not be provided to any Internet subscriber contained in the block list 164. Thus, even if a particular Internet subscriber has placed the user on their forward list, the presence of that particular Internet subscriber's name on the block list 164 will prevent the user's Internet activity from being reported to the particular Internet subscriber. The use of the block list 164 provides certain security assurances to the user that their Internet activity is not being monitored by any undesirable Internet subscribers.

The allow list 166 contains a list of Internet subscribers for whom the user may wish to communicate with but whose Internet activity the user does not wish to monitor.

The system 100 combines the capabilities of the affiliation list 150 with telephone switching technology to filter incoming calls to the destination telephone 104. For example, the user may specify that only calls from Internet subscribers contained in the forward list 154 may contact the user via the destination telephone 104. Alternatively, the user may specify that a calling party whose name is contained in the forward list 160 or the allow list 166 may place a call to the destination telephone 104. As will be discussed in greater detail below, the system 100 allows the user to create general conditional processing, such as blocking calls or allowing calls. However, the user can also create specific conditional processing for individual callers or based on the user's current status or preferences.

The central office switch 116 accesses the affiliation list 150 via the communication link 132 and determines whether the calling party is in a list (e.g., the forward list 160) that the user wishes to communicate with. If the calling party is contained within an "approved" list, the central office switch 116 establishes the communication link 120 and sends a ring signal to the destination telephone 104. Thus, the user can pick up the telephone with the knowledge that the calling party is an individual with whom the user wishes to communicate.

Conversely, if the calling party is not contained within an approved list, such as the forward list 160 or the allow list 166, the central office switch 116 will not establish the communication link 120 with the destination telephone 104. Thus, the user will not be bothered by undesirable phone calls. In one embodiment, the central switch office simply will not establish the communication link 120 and the calling party will recognize that the call did not go through. Alternatively, the central office switch 116 may generate a

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signal indicating that the destination telephone 104 is busy. In this alternative embodiment, the calling party will receive a busy signal on the originating telephone 102. Thus, the user has the ability to filter incoming calls by creating a list of those individuals with whom the user wishes to communicate.

It should be noted that the affiliation list 150 may be dynamically altered by the user to add or delete individuals, change individuals from one list to another, or to change the call processing options for a particular list depending on the user's preferences. For example, the user may want to accept all calls from any source at certain times of the day. Under these circumstances, the user can edit the allow list 166 to accept calls from any calling party. Alternatively, the user may still maintain the block list 164 such that calls will not be processed from certain specified parties even if the user is willing to accept calls from any other source. Under other circumstances, the user may not wish to communicate with any individuals. In this instance, the user may indicate that all calling parties are on the block list 164. Thus, the central office switch 116 will access the Internet 134 in real-time and review data in the affiliation list 150 to thereby process incoming calls for the user in accordance with the rules present in the affiliation list.

The discussion above provides examples of the central office switch 116 processing calls from a calling party in accordance with their presence or absence of certain lists in the affiliation list 150. For example, a call from a party on the forward list 160 will be connected to the destination telephone 104 (see FIG. 2) while a call from a party on the block list 164 will not be put through to the destination telephone. However, the system 100 also allows the selection of call processing options on an individual basis rather than simply on the presence or absence in a particular list. For example, the user can edit the allow list 166 to specify that certain individuals are "allowed" while other individuals may be allowed, conditionally allowed, or blocked all together. If the individual calling party has an associated status indicating that they are allowed, the central office switch 116 will process the incoming call and connect it to the destination telephone 104. If the individual calling party has an associated blocked status, the central office switch 116 will not process the call and will not connect it to the destination telephone 104.

Furthermore, the user may attach conditional status to individual callers or to calling lists. Conditional status may be based on factors, such as the time of day, current availability of the user, work status, or the like. For example, the user may accept calls from certain work parties during specified periods of the day (e.g., 9:00 a.m.-11:00 a.m.), block calls from selected calling parties during other periods of time (e.g., 12:00-1:00 p.m.), or allow calls during a business meeting only from certain calling parties (e.g., the boss). These conditional status criteria may be applied to individuals or to one or more lists in the affiliation list 150.

FIG. 6 illustrates sample data entries in the allow list 166. The allow list 166 may include data, such as a name, Internet subscriber name, and one or more phone numbers associated with the individual data entry. It should be noted that the calling party need not have an Internet subscriber name for proper operation of the system 100. That is, the central office switch 116 accesses the allow list 166 utilizing the calling party number and need not rely on any email addresses or other Internet subscriber identification for proper operation. The allow list 166 may also include an email alias in addition to or in place of the Internet subscriber name. Some Internet subscribers prefer to "chat" with other subscribers

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utilizing an alias rather than their actual Internet subscriber name. The data of FIG. 6 illustrates one possible embodiment for the allow list 166. However, those skilled in the art can appreciate that the allow list 166 may typically be a part of a large database (not shown). Database operation is well known in the art, and need not be described in greater detail herein. The database or other form of the forward list 160 may be satisfactorily implemented using any known data structure for storage of data. For example, the various lists (e.g., the allow list 166, the reverse list 162, the block list 164 and the allow list 166) may all be integrated within a single database structure. The present invention is not limited by the specific structure of the affiliation list 150 nor by the form or format of data contained therein.

Rather than incoming call filtering on the basis of presence in a particular list, such as the allow list 166, as illustrated in FIG. 6, the affiliation list 150 may contain status data on an individual basis. In this event, the central office switch 116 (see FIG. 2) processes the incoming call in accordance with the designated status for that individual. In the example illustrated in FIG. 7, the affiliation list 150 contains one individual with an "allowed" status, one individual with a "blocked" status, and one individual with a "conditional" status based on user-selected criteria. In the example of FIG. 7, the user-selected criteria may be based on the particular phone from which the call is originating as well as the time of day in which the call is originated. For example, the user may wish to allow all calls from a particular number, such as an caller's work number. However, calls from another number, such as the caller's home phone, may be blocked. Other calls, such as from a caller's cellular telephone, may be allowed only at certain times of day. FIG. 7 is intended to illustrate some of the call processing options that are available to the user. As can be appreciated, a variety of different conditional status criteria may be applied to one or more potential calling parties. However, a common feature of the system 100 is that the telecommunication system (e.g., the central office switch 116) determines calling party status on the basis of information stored on the Internet and processes the incoming call in accordance with the user-specified criteria. Moreover, the system 100 operates in real-time to process the incoming call in accordance with the user-specified criteria.

The Internet 134 may be conveniently used as a storage area for the caller specified criteria. The advantage of such data storage on the Internet is that the data is widely accessible to the user. This provides a convenient mechanism for entering new caller data or editing existing caller data. The user can access the affiliation list 150 with the user computer 154 via the network link 156. In contrast, the central office switch 116 may access the affiliation list 150 via the communication link 132, which may typically be a high-speed communication link. In addition, FIGS. 2, 4, and 5 illustrate the central office switch 116 as the telecommunication component that accesses the Internet 134. It is convenient for operational efficiency to have the central office switch (e.g., the central office switch 116) to which the destination telephone 104 is connected perform such Internet access. It is at this stage of the telephone call processing that the telecommunication system may most conveniently determine the user-specified caller status. However, those skilled in the art will recognize that the status check may be performed by other portions of the telecommunication system, such as the central office switch 106, the LDC 124, or the like. Thus, the present invention is not limited by the particular telecommunication component that establishes the communication link with a network which the user-specified caller status data is stored.

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In addition, the system 100 can be readily implemented as an "add-on" component of the telecommunication system and need not be integrated with the central office switch 116. For example, the conventional central office switch provides the ability to divert calls based on certain call conditions, such as "Call Forward No Answer," which may be used to divert an incoming call to voicemail or "Call Forward Busy," which may also divert the incoming call to voicemail. To implement the system 100 with an add-on processor, the system may optionally include a Switch to Computer Applications Interface (SCAI) 174 and a call filtering processor 176. The dashed lines of FIG. 4 are intended to illustrate an alternative configuration of the system 100. This alternative configuration can also be implemented with other telephone system configurations, such as illustrated in FIGS. 2 and 3. The SCAI 174 is a telecommunication protocol that allows switches to communicate with external computers. Data, such as caller and callee telephone numbers, and status information, such as Call Forward Busy, are provided to the SCAI 174 by the central office switch 116.

The call filtering processor 176 performs the functions described above to process the call in accordance with the user-specified criteria. That is, the call filtering processor 176 receives caller and callee data from the SCAI 174 and accesses the affiliation list 150 via the communication interface 136 (see FIG. 2). The call filtering processor 176 uses user-specified call processing criteria to generate instructions for the central office switch 116. The instructions are provided to the central office switch 116 via the SCAI 174. Those skilled in the art will appreciate that the SCAI 174 is but one example of the Open Application Interface (OAI) that can be used with the central office switch 116.

As noted above, the system 100 can process a call intended for the destination telephone 104, block a call, or generate a busy signal at the originating telephone 102. However, the system 100 also operates with voicemail and permits a number of different customized outgoing messages. FIG. 4 illustrates a voicemail system 180 having a storage area containing one or more outgoing messages 182. For example, the voicemail system 180 can play an outgoing message 182 informing the caller that "the party you are calling only accepts calls from designated callers. Please leave a message." If calls are blocked only at certain times, the outgoing message 182 can say "the party you are calling does not accept calls between 11:30 a.m. and 1:00 p.m. Please leave a message or call back after 1:00 p.m." The outgoing message can also reflect callee availability by playing a message such as "The party you are calling is in a meeting. Please leave a message or call back in X minutes" where X reflects the amount of time before the meeting is expected to end. That information can be manually provided to the affiliation list 150 by the user or automatically derived from a computerized scheduling program on, by way of example, the user computer 154 (see FIG. 2).

Computerized scheduling programs, such as Microsoft® Schedule Plus, can be used on the user computer 154 (see FIG. 2). It is known that such scheduling programs can be accessed via a computer network or downloaded to a handheld computing device to track appointments. The system 100 can access such computerized scheduling programs and download appointments and scheduled meetings into the affiliation list 150. The outgoing messages 182 can be automatically selected on the basis of the user's computerized schedule. Thus, the system 100 permits the user to schedule his day (e.g., meetings, lunch time, in office/

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available for calls, in office/unavailable for calls, etc.) on a computerized scheduling program and to process calls in accordance with the computerized schedule and even select outgoing messages automatically based on the user's schedule.

The operation of the system 100 is illustrated in the flowchart of FIG. 7. At a start 200, the calling party has placed a call from the originating telephone 102 (see FIG. 2) to the destination telephone 104. In step 202, the central office switch 116 has received call data from the originating telephone 102. The received call data includes the destination telephone number of the destination telephone 104 and identification data indicating the originating telephone 102 as the source of the present call. Use of automatic number identification (ANI) is a well-known technique for providing identification data indicating the originating telephone 102 as the source of the present call. While the specific implementation of ANI data, sometimes referred to as caller ID, may not be uniformly implemented throughout the United States, the ANI data is typically delivered between the first and second rings. In the present invention, the central office switch 116 (see FIG. 2) does not initiate a ring signal to the destination telephone 104 until after determining the status of the calling party based on the ANI. In future implementations, telecommunication companies may transmit other forms of caller identification, such as caller name, Internet address, email alias, or the like. The system 100 operates satisfactorily with any form of caller identification. The only requirement for the system 100 is that some form of caller identification be provided. The call is processed in accordance with the user-specified criteria in the affiliation list 150 for the identified caller.

In step 204, the central office switch 116 (see FIG. 2) establishes the communication link 132 with the Internet 134. Although step 204 illustrates the system 100 as actively establishing the communication link 132 with the Internet 134, those skilled in the art will recognize that the system 100 can utilize a continuous high-speed data link between the central office switch and the Internet. Thus, it is not necessary to establish a network link for each and every incoming call processed by the central office switch 116. As previously described, the communication interface 136 translates data between the telephone protocol and the Internet protocol. In step 206, the system 100 accesses the affiliation list 150 for the user (i.e., the called party). In an exemplary embodiment, the telephone number of the destination telephone 104 or other callee identification is used as an index or pointer to a specific location within the database where the affiliation list 150 for the particular user may be found. Database operation in general, and techniques for locating specific items within a database in particular are known to those skilled in the art and need not be described herein.

In decision 210, the system 100 determines whether the caller identification data is on the forward list 160 (see FIG. 3). If the caller identification data is present in the forward list, the result of the decision 210 is YES. In that event, the system 100 proceeds to FIG. 7B where the call is processed in accordance with the rules associated with the forward list 160.

If the caller identification data is not present in the forward list 160 (see FIG. 3), the result of decision 210 is NO. In that event, the system 100 moves to decision 212 to determine whether the caller identification data is in the allow list 166. If the caller identification data is present in the allow list 166, the result of decision 214 is YES. In that event, the system 100 proceeds to decision 216 where the

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call is processed in accordance with the rules associated with the allow list 166. If the caller identification data is not present in the allow list 166, the result of decision 216 is NO.

In decision 218, the system 100 determines whether the caller identification data is present in the reverse list 162. If the caller identification data is present in the reverse list 162, the system 100 proceeds to the step 220 where the call is processed in accordance with the rules associated with the reverse list 162. If the caller identification data is not present in the reverse list, the result of decision 218 is NO. In that event, the system moves to decision 216 to determine whether the caller is present on the block list 164. If the caller is present on the block list 164, the result of decision 222 is YES. In that event, the system proceeds to step 224 where the call is processed in accordance with the rules associated with the block list. If the caller identification data is not present in the block list 164, the result of decision 222 is NO. This indicates that the caller identification data is not present in any of the user-specified lists in the affiliation list 150. In that event, the system moves to step 226 where the call may be processed in accordance with user-specified rules of processing anonymous or unidentified calls. The flowchart of FIG. 8 illustrates the operation of the system 100 with multiple lists wherein the call processing rules are designated for each list. In this embodiment, the call is processed on the basis of the presence or absence of the caller identification data in a particular list. However, as previously discussed, the affiliation list 150 (see FIG. 6B) may include user-specified status criteria for individual callers. In this embodiment, the system 100 processes the call on the basis of the user-specified status criteria associated with the individual caller rather than on the basis of the caller's presence or absence in a specific list. In that event, the system 100 may simply access the user affiliation list (see step 206 in FIG. 7) and process the call in accordance with the user-specified status criteria for the individual caller. If the caller identification data is not present in the affiliation list 160, the call may be processed using user-specified call processing criteria for unidentified callers, as shown in step 226.

Thus, the system 100 allows the user to specify call processing rules for a plurality of different caller lists or for individual callers within a list. The caller lists may be readily edited in accordance with the changing desires of the user. The user may alter the call processing rules in accordance with various times of day, work conditions, or even the personal mood of the user. For example, the user may process all calls during certain times of the day, such as when the user is at work. However, when the user arrives home, subsequent calls may be processed in accordance with a different set of rules, such as accepting no calls during dinner time or after a certain time at night.

These rules may be applied differentially to different ones of the list in the affiliation list 150. For example, the user may accept calls from any calling party on the forward list 160 (see FIG. 3) or the allow list 166 during the evening hours. However, after a certain time at night, the caller may accept calls only from calling parties on the forward list 160. Thus, the system 100 allows great flexibility in the user selection of calling rules and lists. The system 100 allows the user to filter incoming calls in accordance with generalized rules or in accordance with highly specific rules.

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. For example, the system discussed herein

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uses, by way of example, the Internet 134 to store the affiliation list 150. However, the system 100 can be implemented with other computer networks or as a portion of a telephone switch, such as the central office switch 116. The telephone service provider can provide a customer with an affiliation list and some means to control the list as a value-added telephone service. The central office switch 116 accesses the internal affiliation list and processes the incoming calls in accordance with the user-specified criteria contained therein. Accordingly, the invention is not limited except as by the appended claims.

What is claimed is:

1. In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

a controller to receive the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

2. The system of claim 1 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

3. The system of claim 2 wherein the identification data is telephone automatic number identification data.

4. The system of claim 2 wherein the identification data is electronic mail identification data.

5. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

6. The system of claim 1 wherein the user-selectable criteria indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

7. The system of claim 6 wherein the controller blocking the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

8. The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone.

9. The system of claim 1 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the controller processing

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the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during a time period other than the user-selected time period.

10. The system of claim 9, further comprising an outgoing message system storing a plurality of outgoing messages, the controller selecting one of the plurality of outgoing messages wherein the outgoing message system plays the selected outgoing message at an origination telephone from which the incoming call is originated.

11. The system of claim 10 wherein the incoming call arrives at a particular time other than the user-selected time period, the controller selecting the selected outgoing message based on the particular time of arrival of the incoming call.

12. The system of claim 1, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

13. The system of claim 12 wherein the data editor is a computer coupled to the computer network.

14. The system of claim 1 wherein the computer network is the Internet.

15. The system of claim 1 wherein each of the one or more lists of the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the controller using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

16. The system of claim 15, further comprising a data editor to permit user entry of the caller identification data into the data structure prior to receipt of the incoming call.

17. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls, the controller processing the incoming call and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

18. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, the controller blocking processing of the incoming call if the origination identification data corresponds to caller identification data in the first of the plurality of data substructures.

19. The system of claim 18 wherein the controller blocking processing of the incoming call generates a busy signal at an origination telephone from which the incoming call is originated.

20. The system of claim 15 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incoming calls subject to user-selected time restrictions, the controller processing the incoming call in accordance with the time restrictions and signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

21. In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled

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with the telephone network, a system for user specification of call processing in the telephone network, the system comprising:

a data structure contained within a computer network and accessible by the telephone network, the data structure containing a plurality of caller lists each having associated user-selectable criteria for call processing, wherein some of the plurality of caller lists are conditioned according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the plurality of caller lists; and

a controller on the telephone network to receive an incoming call having origination data indicative of a subscriber and destination data indicating the call is designated for the user telephone, the controller accessing the plurality of caller lists in the data structure via the computer network access port to determine which of the plurality of caller lists contains the origination data, the controller processing the incoming call in accordance with the user-selectable criteria associated with the caller list containing the origination data.

22. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call, the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone.

23. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone.

24. The system of claim 21 wherein the user-selectable criteria associated with the caller list containing the origination data indicates permission to process the incoming call during a user-selected time period, the controller processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone, the controller blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

25. The system of claim 21, further comprising a data editor to permit user entry and editing of the user-selectable criteria into the data structure.

26. The system of claim 21 wherein the computer network is the Internet.

27. The system of claim 21 wherein the telephone network is a public switched telephone network.

28. In a system where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a computer program product for implementing a method for processing a call from a subscriber to a user over a telephone network, the computer program product comprising:

a computer readable medium having computer executable instructions for performing the method, the method comprising:

accepting an incoming call designated for the user telephone;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the

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user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call in accordance with the user-selectable criteria.

29. The computer program product of claim 28, further comprising:

generating call processing rules based on the user-selectable criteria; and

storing the call processing rules on the computer network in association with a caller list.

30. The computer program product of claim 29 wherein generating call processing rules is performed on a computer coupled to the computer network.

31. The computer program product of claim 28 wherein the data structures store the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the method further comprising accessing the data structure using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

32. The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call, the method comprising:

processing the incoming call comprising establishing a link with the user telephone; and

generating a ring signal at the user telephone.

33. The computer program product of claim 28 wherein the user-selectable criteria indicates no permission to process the incoming call, the method further comprising

processing the incoming call comprising blocking the incoming call; and

not generating a ring signal at the user telephone.

34. The computer program product of claim 33, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

35. The computer program product of claim 34, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

36. The computer program product of claim 28 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, the method further comprising:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone; and

blocking the incoming call and not generating a ring signal at the user telephone during time periods other than the user-selected time period.

37. The computer program product of claim 28 wherein the data structure comprises a plurality of data substructures each storing caller identification data and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, the method further comprising:

accessing the data structure using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data; and

processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

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38. In a system including a telephone network and a computer network where an originating telephone connects with a user telephone over the telephone network, a method for processing a call from the originating telephone to the user telephone according to user specifications, the method comprising:

accepting an incoming call designated for the user telephone from an originating telephone of a subscriber;

accessing a data structure contained within a computer network that is independent of the telephone network to retrieve user-selectable criteria for call processing stored within the data structure, wherein some of the user-selectable criteria is conditioned on current activity of subscribers on the computer network or according to current activity of the user on the computer network; and

processing the incoming call of the subscriber in accordance with the user-selectable criteria.

39. The method of claim 38, further comprising generating call processing rules based on the user-selectable criteria and storing the call processing rules on the computer network in association with a caller list that is associated with the data structure.

40. The method of claim 39 wherein generating call processing rules is performed on a computer coupled to the computer network.

41. The method of claim 38 wherein the computer network is the Internet.

42. The method of claim 38 wherein the telephone network is a public switched telephone network.

43. The method of claim 38 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, wherein accessing a data structure further comprises using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

44. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call, wherein processing the incoming call further comprises establishing a link with the user telephone and generating a ring signal at the user telephone.

45. The method of claim 38 wherein the user-selectable criteria indicates no permission to process the incoming call, wherein processing the incoming call further comprises blocking the incoming call and not generating a ring signal at the user telephone.

46. The method of claim 45, further comprising generating a busy signal at an origination telephone from which the incoming call is originated.

47. The method of claim 45, further comprising playing an outgoing message at an origination telephone from which the incoming call is originated, the outgoing message indicating that the incoming call will not be connected to the user telephone.

48. The method of claim 38 wherein the user-selectable criteria indicates permission to process the incoming call during a user-selected time period, wherein processing the incoming call further comprises:

processing the incoming call during the user-selected time period in accordance with the permission to generate a ring signal at the user telephone;

blocking the incoming call; and

not generating a ring signal at the user telephone during time periods other than the user-selected time period.

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49. The method of claim 38 wherein the data structure comprises a plurality of data substructures each storing caller identification and having the user-selectable criteria associated with each of the plurality of data substructures, wherein the incoming call includes origination identification data associated therewith, wherein accessing the data structure further comprises using the origination identification data to determine a particular one of the plurality of data substructures storing caller identification data corresponding to the origination identification data and processing the incoming call in accordance with the user-selectable criteria associated with the particular one of the plurality of data substructures.

50. The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will accept incom-

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ing calls, wherein processing the incoming call further comprises signaling the user telephone of an incoming call directed to the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

51. The method of claim 49 wherein a first of the plurality of data substructures is a list of caller identification data to identify individuals from whom the user will not accept incoming calls, wherein processing the incoming call further comprises not establishing a communication link with the user telephone if the origination identification data corresponds to caller identification in the first of the plurality of data substructures.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,421,439 B1
DATED : July 16, 2002
INVENTOR(S) : Stephen Mitchell Liffick

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 1.

Line 37, after "need for" please insert -- a --

Column 3.

Line 61, before "and the like" please delete "(ROM)," and insert -- (ROMs), --

Column 5.

Line 3, after "In" please delete "true" and insert -- turn --

Column 10.

Line 28, after "such as" please delete "an" and insert -- a --

Column 17.

Line 31, after "method further comprising" please insert -- : --

Signed and Sealed this

Sixth Day of April, 2004

A handwritten signature in black ink, appearing to read "Jon W. Dudas", written over a horizontal line.

JON W. DUDAS
Acting Director of the United States Patent and Trademark Office

EXHIBIT 2



US006041114A

United States Patent [19]

Chestnut

[11] **Patent Number:** **6,041,114**
 [45] **Date of Patent:** **Mar. 21, 2000**

[54] **TELECOMMUTE SERVER**[75] Inventor: **Kevin L. Chestnut**, Seattle, Wash.[73] Assignee: **Active Voice Corporation**, Seattle, Wash.

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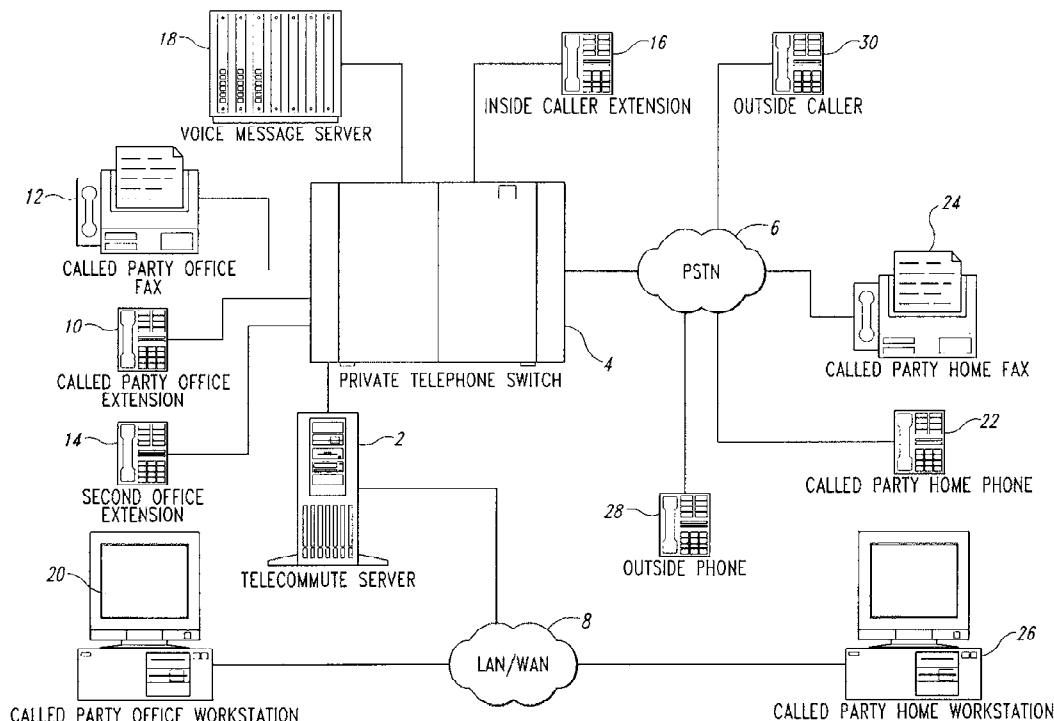
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[21] Appl. No.: **08/825,206**[22] Filed: **Mar. 27, 1997**[51] Int. Cl.⁷ **H04M 3/42**[52] U.S. Cl. **379/211; 379/93.02; 379/212;**
379/214[58] **Field of Search** 379/210, 211,
379/219, 220, 93.02, 93.03[56] **References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Creighton Smith*Attorney, Agent, or Firm*—Graybeal Jackson Halcy LLP[57] **ABSTRACT**

A method and device for managing a telecommunication system, including call forwarding, with a computer network (LAN, WAN, etc.) integrated with a private branch exchange (PBX) connected to a Public Switched Telephone Network (PSTN). Calls are forwarded based upon the device used to log onto the computer network by the called party.

41 Claims, 5 Drawing Sheets

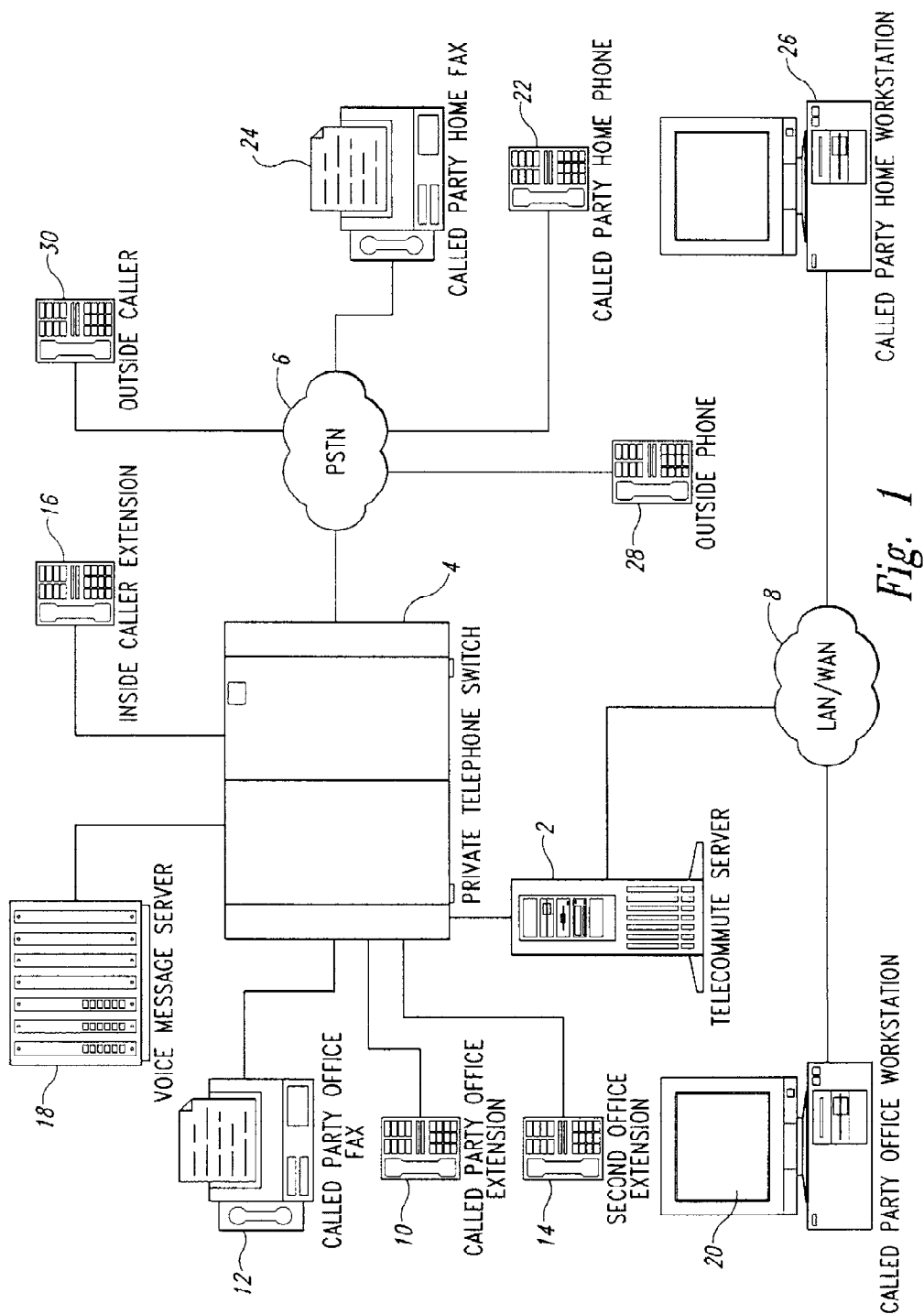
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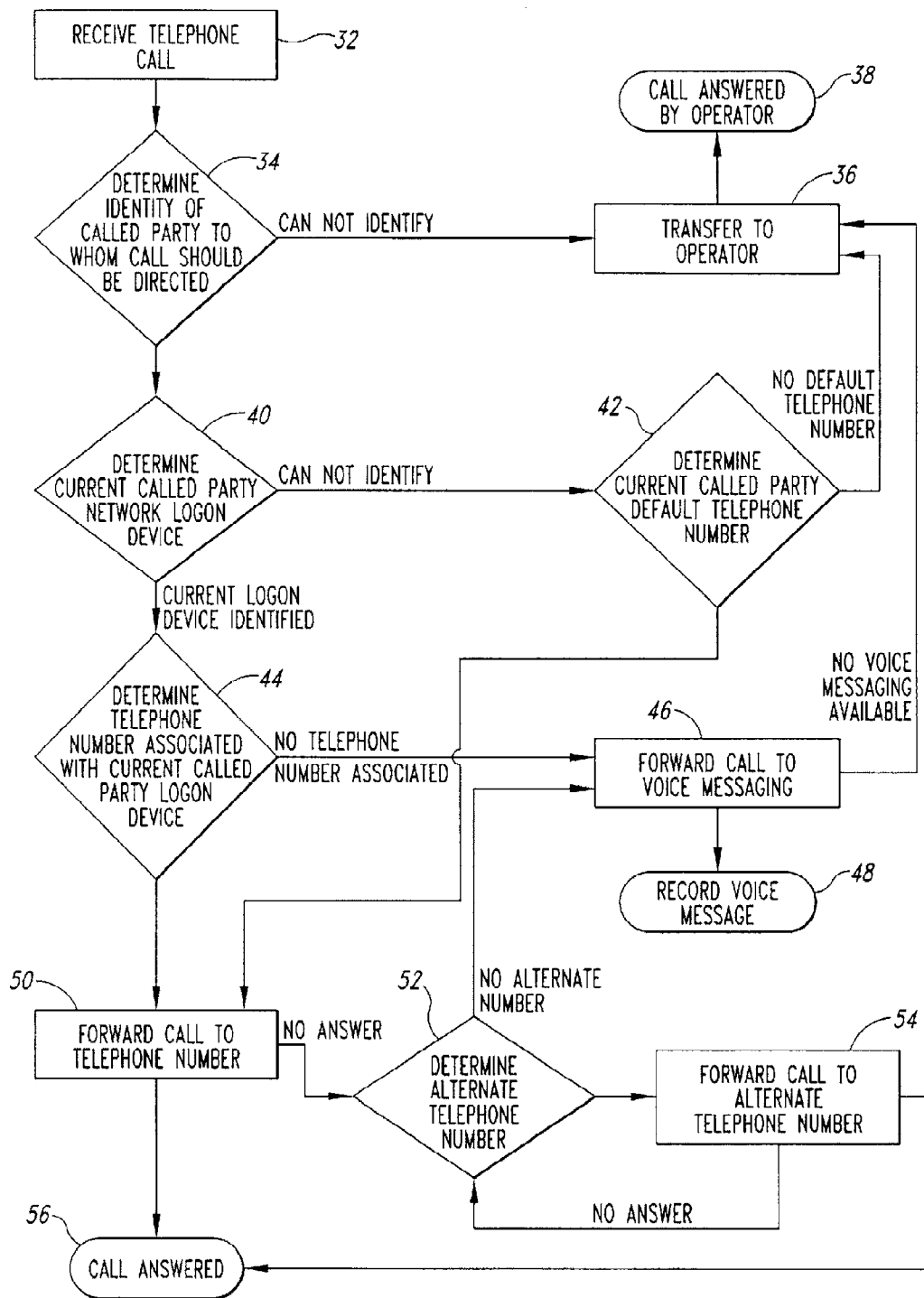


Fig. 2

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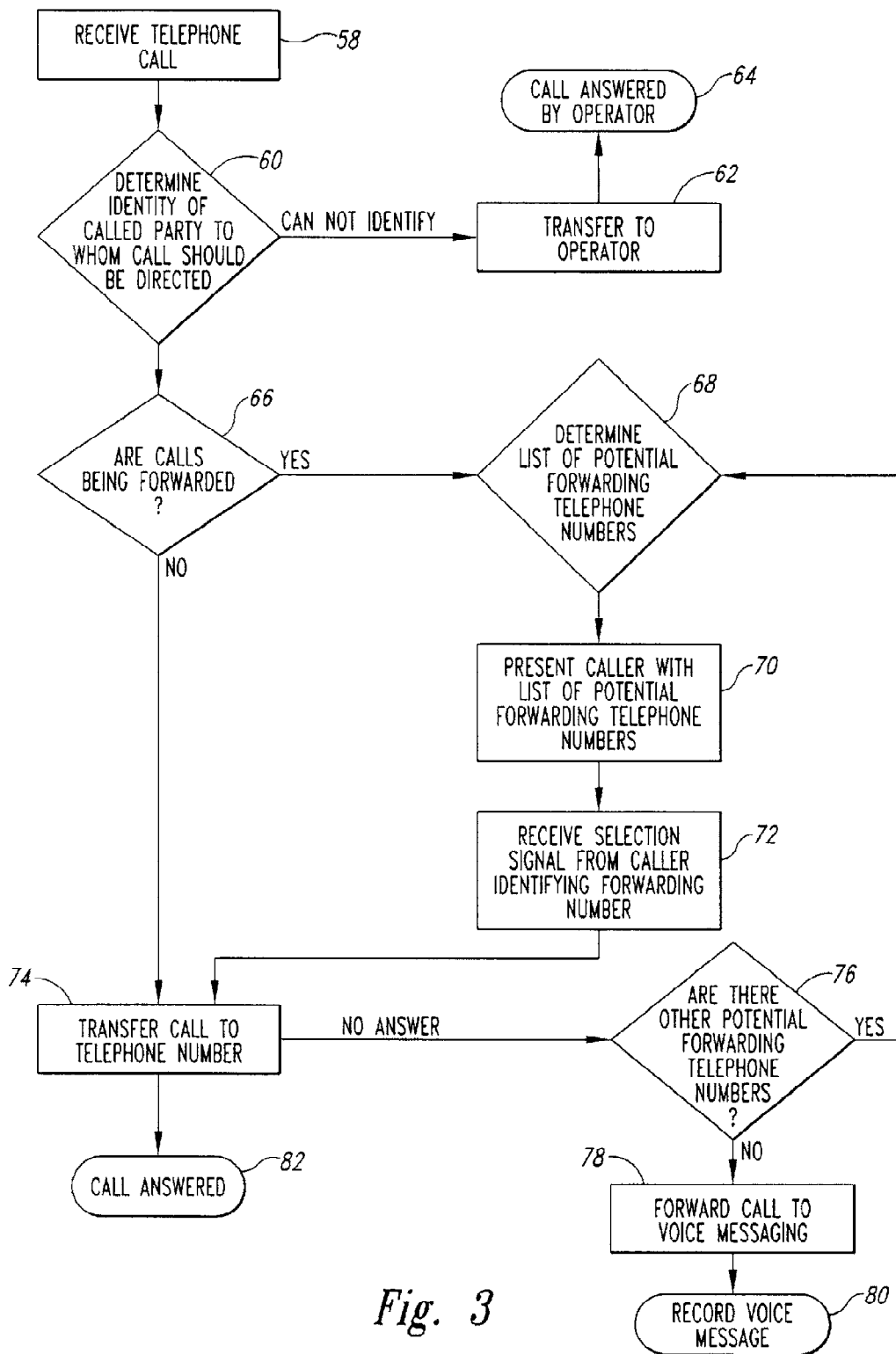


Fig. 3

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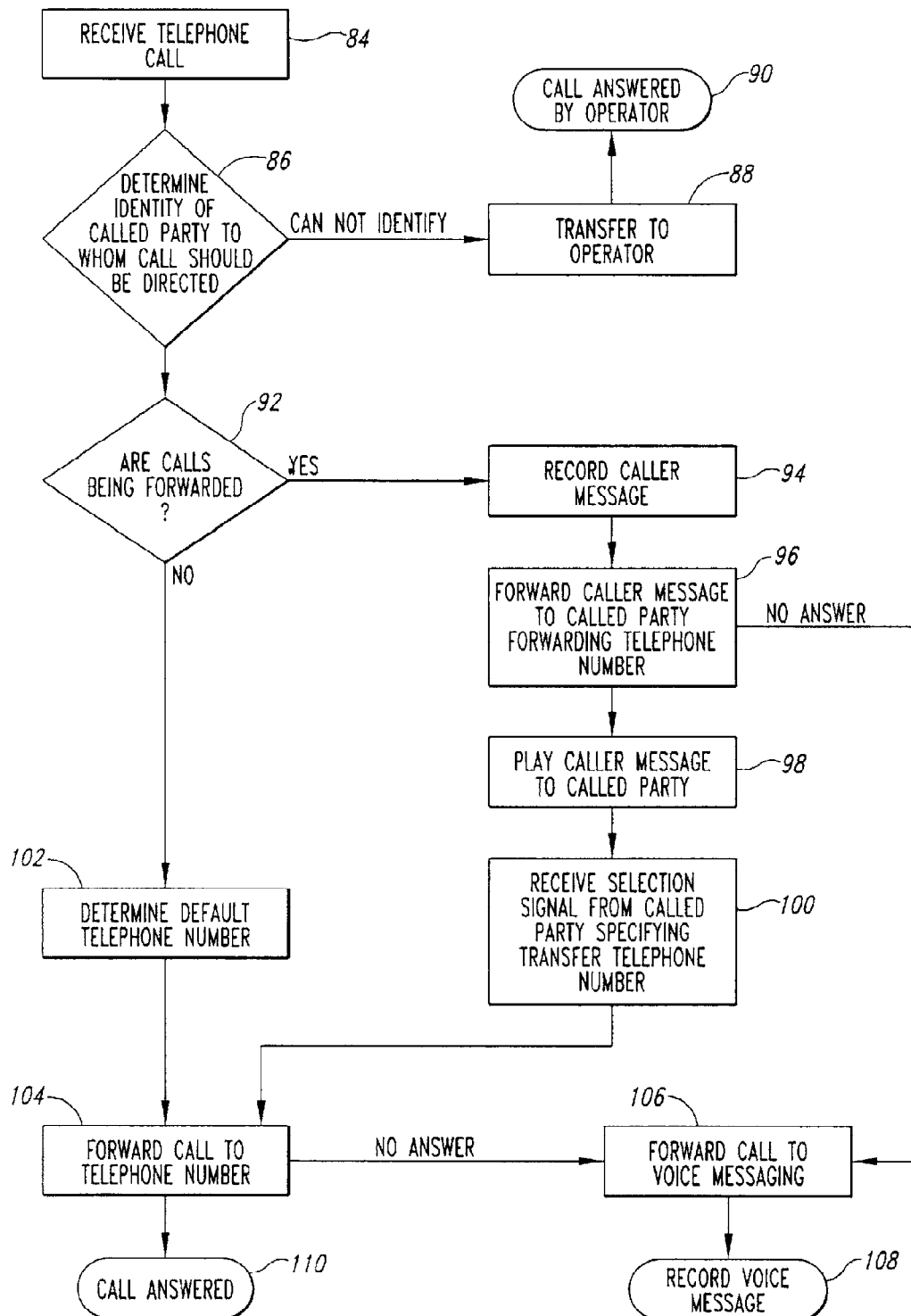


Fig. 4

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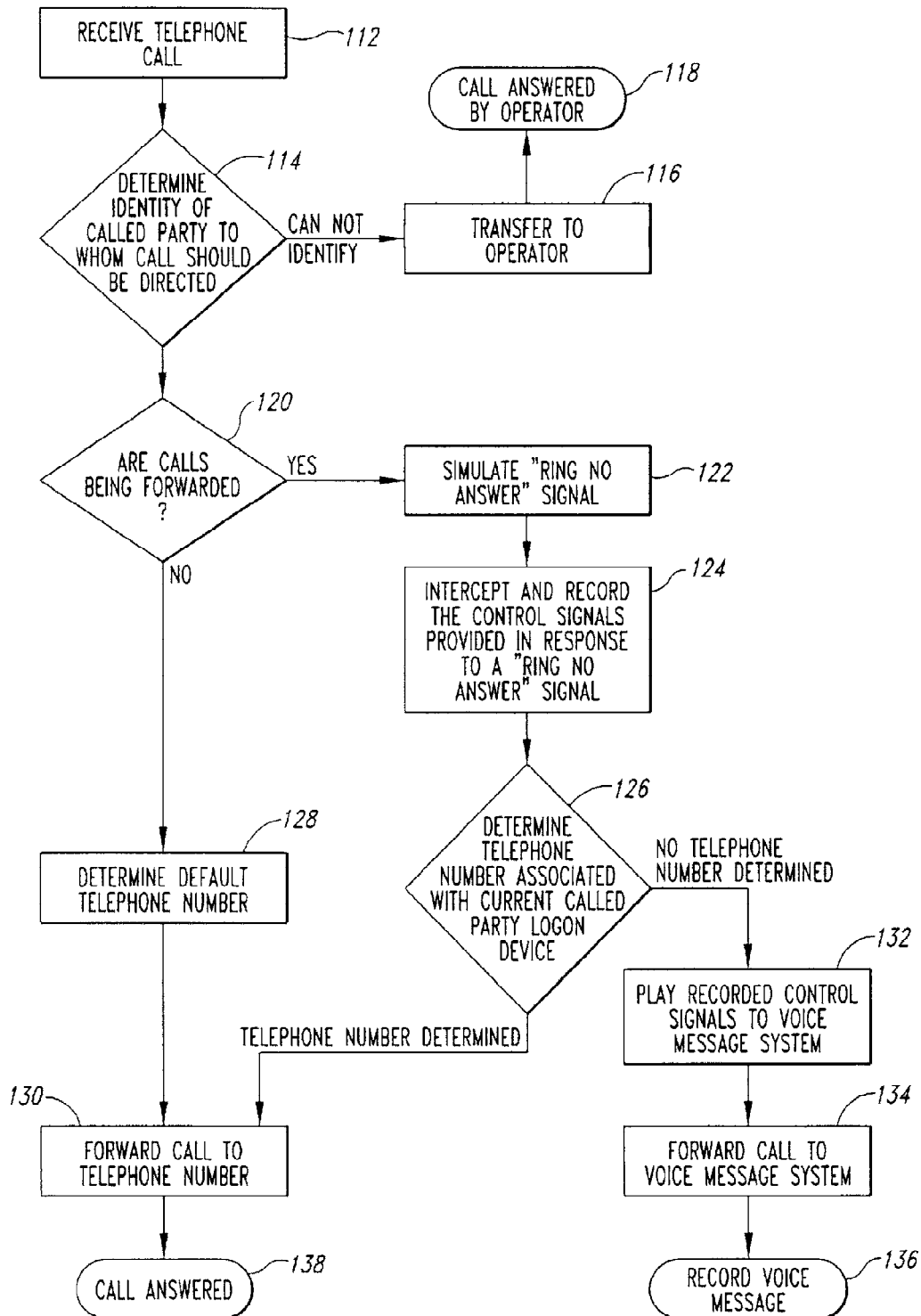


Fig. 5

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TELECOMMUTE SERVER**FIELD OF THE INVENTION**

The present invention relates generally to a system for managing a telecommunications system, and more particularly to a telecommunications management system which controls call forwarding based upon user activity on an associated computer terminal.

BACKGROUND OF THE INVENTION

Telecommuting is the substitution of telecommunications technology for the trip to and from the primary workplace. Computers, cellular phones, voice messaging, fax machines, and advanced communications links such as Integrated Services Digital Network (ISDN) and dial-up access have removed the barriers that once required workers to be in their offices. Telecommuting applies to employees working at home, employees working from a satellite office, and employees working "on the road".

The potential advantages of telecommuting are numerous and varied. Beyond the obvious advantages such as reduced rush hour traffic and enhanced air quality, there are a number of less obvious advantages such as increased employee productivity and expanded geographic range. Additionally, total office space requirements can be reduced when employees work at home, satellite offices can be established with lower overhead and are possible in areas that would have been geographically prohibitive, and emergency preparedness is improved through the decentralization of resources.

The Local-Area Network (LAN) is fast becoming the technology backbone of today's offices, since more and more computing and information resources are based on the LAN. Office workers who come to rely on easy LAN access need the same kind of access when they are working away from the office.

While electronic mail grows in popularity, the telephone and accompanying voice messaging systems are still a necessary part of the modern business environment. Computer and telephone systems are being linked through Computer Telephony Integration (CTI) applications which facilitate incoming and outgoing call handling and control.

CTI applications can be used to seamlessly interface the caller, the called party, and information on a host computer for a variety of applications. CTI applications deliver caller ID, automatic number identification (ANI), dialed number identification services (DNIS), and interactive voice response (IVR) dialed digits, such as a customer's account number, to a software application. CTI applications can also deliver request signals, such as "hold call" or "transfer call", to a telephone system.

Numerous prior art systems allow employees to access a Local Area Network via a remote dialup. Once connected they can access most of the resources of the LAN as if they were in the office. However, since the telephone they are using is not part of the office phone system they are cut off from the bulk of the CTI application functions they have available to them at the office. Some systems may allow them to listen to voice mail, however they are no longer able to use any applications which require them to have access to a telephone connected to the office telephone system. Other prior art systems allow employees to remotely access voice messaging and set call forwarding through the use of Dual Tone Multi Frequency (DTMF) tones from a touch tone phone.

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In most prior art systems, the lack of integration between a company's telephone system and LAN means that an employee has to call in to the company's phone system to check their voice messaging, manually set call forwarding, and then remotely log on to the company's LAN. After call forwarding is set up, people calling the employee will have lost the ability to leave voice messaging or the employee will have to continue to call in to check their voice messaging. After logging off the LAN, the employee must remember to call into the company's telephone system to discontinue call forwarding. Furthermore, there are numerous telephone systems which do not even afford this level of connectivity, which in turn makes telecommuting a less viable alternative.

In order for a company and its employees to obtain the fullest benefit from telecommuting, communications between telecommuting employees, the primary office, and the outside world must be managed efficiently. The management of telecommunications resources extends to telephone and data communications alike. There is a need for a telecommunications management system which closely integrates a company's LAN with its telephone network and makes the same CTI application functions available to an employee whether they are in the office or working from a remote location.

The present invention closely integrates a company's LAN with its telephone network and controls call forwarding based upon user activity on an associated computer terminal. The present invention extends the functionality of the office telephone system to whatever phone the employee has available at a remote location.

SUMMARY OF THE INVENTION

The present invention, referred to as a telecommute server, is a method for controlling call forwarding using a computer connected to a data network and a telephone network. The call is forwarded based upon whether or not the called party is logged onto the data network. The forwarded call is directed to a telephone line associated with the terminal from which the called party is logged on. The called party may be associated with a particular extension and calls directed to that extension will ring through to the phone associated with the computer the called party is currently logged onto.

Call forwarding is terminated when the called party logs off or the connection is broken. The called party may instruct the system to continue call forwarding for a specified amount of time after a disconnection or they log off. Call forwarding may also be scheduled for a predefined period of time after an initial logon regardless of whether the computer is logged on or off.

Call forwarding based on computer logon may be further scheduled so that calls are forwarded to different telephone lines associated with telephones or voice messaging systems depending upon a predefined schedule. Alternatively, call forwarding may be made conditional based upon other information received by the telephone system, such as caller ID or ANI. The system can also be set up to alter the schedule if it detects that the called party is logged onto a terminal associated with a different telephone extension than the one defined in the schedule.

Logging on to the data network may cause more than one phone line to be forwarded. By way of example, logging on from a computer at home may cause voice phone calls to be forwarded to one telephone line associated with the called party's home and fax calls directed to a particular fax machine to be forwarded to another location. Also, the type

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of connection used to log on may serve to identify which extension the calls should be forwarded to.

Calls may originate from outside or from within the company and may be forwarded within the company or to an outside line. This is an important feature of the invention because it makes employees just as accessible as they would be if they were at their desk in the employer's office.

Another aspect of the present invention provides a method for controlling call forwarding by providing the caller with the option of trying the called party at a second location if they are not available at a first location.

In one embodiment, the caller may be provided with a list of locations, any of which can be selected by the caller and tried in order to locate the called party. The list may be modified by the day of the week, the time of day, or whether or not the called party is currently logged on from a remote location. The list may also offer the caller the option to have the call forwarded to a third party.

Additionally, the system may also provide different callers with different levels of access to call forwarding options. Callers may be identified through "caller ID", inputting an identifying code via the telephone touchpad, or some other method of identification. Unknown or low priority callers may only be given the option of leaving a message or having the call transferred to another party while a higher priority caller may be given the option of trying to reach the called party at home.

The system may also be set up to record a message from the caller to be played to a remote called party as part of determining how best to forward the call. The call forwarding options may be automatic or may be presented to the caller or the called party in the form of a menu. The menu may be presented audibly over the phone line or it may be presented in list form on a display. The display may either be part of a communications device or a separate computer display.

The system of the present invention may also be used in conjunction with a Network Switch Server (NSS) which would give the caller the ability to respond to a call forwarding option menu from a computer terminal via a data network.

The present invention also includes a call progress manager which controls the protocols used to forward a call depending upon where the call originated and where it was forwarded to. Progress tones such as busy, trunk busy (reorder), ring no answer, answered by human, answered by machine, are managed. The present invention generates the necessary control signals to respond to the progress tones generated by the outside telephone network.

The system of the present invention can distinguish between internal extensions, outside lines, cell phones, Internet voice, and 2 way pagers. For example, on internal calls when there is "no answer", the system can be instructed to intercept for remote presence determination and ring at remote location while calls from outside the company are sent to a voice messaging system. Remote presence determination includes checking to see if the party being called is logged onto the data network or if they have scheduled to have calls forwarded at this time.

The present invention, a telecommute server, can either be integrated into a system which includes voice messaging or may be used as a stand-alone system which can be connected to a separate voice messaging system. The telecommute server intercepts incoming calls which would be forwarded to voice mail because of a "ring no answer" progress tone, records the DTMF tones which would be provided to the

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voice messaging system, and checks to see if there is an alternative line to which the call should be forwarded. If there is no alternative line to which the call should be forwarded, the system telecommute server passes the call onto the voice messaging system. If there is a line to which the call should be forwarded, the telecommute server forwards the call to the specified line. If there is no answer at the forwarded number, the Telecommute Server transfers the call back to the voice messaging system and plays the earlier recorded DTMF tones to the voice messaging system. The voice messaging system then answers the call as it would have without the presence of the telecommute server. The telecommute server can, through recording the DTMF tones, control any DTMF controlled device. The system can be implemented so as to work with any prior art device whether it uses in-band or outband signaling.

These and other features of the present invention will be more fully appreciated when considered in light of the following detailed description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a functional diagram of the present invention.

FIG. 2 is a flowchart of the method of the present invention.

FIG. 3 is a flowchart of the method of the present invention.

FIG. 4 is a flowchart of the method of the present invention.

FIG. 5 is a flowchart of the method of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

FIG. 1 shows the telecommute server 2 connected to a computer network 8 and a private telephone switch (private branch exchange (PBX)) 4 which in turn is connected to a Publicly Switched Telephone Network (PSTN) 6. A called party office extension 10, a called party office fax machine 12, a second office extension 14, an inside caller extension 16, and a voice messaging system 18 are also connected to the PBX 4. A called party office workstation 20 is connected to the computer network 8. Called party home phone 22, called party home fax 24, outside phone 28, and outside caller 30 are all connected to PSTN 6. A called party home workstation 26 is connected to the computer network 8.

When an outside caller 30 places a call on the PSTN 6 the call is directed to the called party office extension 10 by the private branch exchange 4. Before the PBX sends the call to the called party office extension 10, the telecommute server 2 checks the computer network 8 to see if the called party is logged on. If the called party is logged on, the telecommute server 2 instructs the private branch exchange 4 to forward the call to the telephone extension associated with the device the called party has used to log onto the computer network 8.

If the called party was logged onto the computer network 8 from the called party office workstation 20, then the call would be directed to the called party office extension 10. If the called party were logged onto the computer network 8 from the called party home workstation 26, then the telecommute server 2 would instruct the PBX 4 to forward the call to called party home phone 22. The telecommute server 2 selects the telephone number to which incoming calls should be forwarded based upon a record stored in a memory which associates a forwarding telephone number, such as the

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number for called party home phone 22, with a network logon device, such as called party home workstation 26.

If the connection between the network logon device, called party home workstation 26 or called party office workstation 20, and the computer network 8 is interrupted, intentionally (via a logoff) or accidentally (via a disconnect), the telecommute server 2 can continue to forward calls for a specified period of time after a disconnect or logoff. Alternatively, the telecommute server 2 can continue to forward calls to a previously associated telephone number for a specified period of time after a disconnect but forward calls to another telephone number or a voice message system after the called party logs off. The telecommute server 2 may either have the call forwarding preferences preprogrammed into it or the forwarding preferences may be entered by the called party when he/she logs onto or off of the computer network 8.

The telecommute server 2, can also forward incoming calls based upon other criteria including day or date, time of day, the identity of the caller, or any preprogrammed set of rules. It is within the scope of the invention for the telecommute server 2 to utilize a set of forwarding preferences which are based the above criteria as well as other factors such as who else in the office is logged onto the computer network 8 or the telephone extensions currently in use.

If the called party is not currently logged onto the computer network 8, the telecommute server 2 will instruct the PBX 4 to direct the call to a default telephone number. In most instances, the called party office extension 10 will be the default telephone number. If the called party office extension 10 is not answered (generating a "ring no answer" signal), the PBX 4 may forward the call to a voice messaging system 18. Alternatively, the telecommute server 2 may instruct the PBX 4 to send the incoming call to a voice messaging system 18 if the called party is not logged onto the computer network 8.

In another embodiment of the present invention, the telecommute server 2 will be used with a voice messaging system 18 that requires information, in the form of control signals, from the PSTN 6 or PBX 4. When the telecommute server intercepts an incoming call to check if the called party is logged onto the computer network 8, it also records any control signals that would normally be provided to the voice messaging system from the PBX 4 or PSTN 6. If the telecommute server identifies that the called party is logged on, then it will forward the call to the appropriate telephone number. If the call is forwarded to a telephone number and there is no answer, then the telecommute server 2 plays the appropriate control signals to the voice messaging system 18.

The telecommute server 2 can also be set up to present a caller with a menu listing locations to which the call can be forwarded. The caller then selects a location, most likely using the telephone touchpad, and the telecommute server forwards the call to the selected location. If there is no answer, the telecommute server 2 can either transfer the call to a voice messaging system 18 or try another location. The menu presented to the caller may be modified based upon whether or not the called party is logged onto the computer network 8, time of day, day or date, or the caller's identity.

In another embodiment, the telecommute server 2 can ask the caller to record a message for the called party. The message is then forwarded to and played for the called party. The called party is then presented with a menu which allows him to take the call, record a message to be played for the calling party, transfer the call to a voice messaging system,

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or transfer the call to another telephone number. The options available to the called party may be modified based upon whether or not the called party is logged onto the computer network 8, time of day, day or date, or the caller's identity.

FIGS. 2-5 illustrate the methods embodied by the present invention. Reference numerals below refers to described steps in the method, not to any noun that they happen to follow.

In FIG. 2 a telephone call is received 32 and the identity of the called party is determined 34. If the called party can not be identified, the call is transferred to an operator 36 and the call is answered by an operator 38.

The identity of the called party is determined 34 by looking up the dialed extension in an index stored in a computer memory and storing the identity of the associated called party stored in a memory. If the identity of the called party is determined, then the next step is to determine the current called party network logon device 40. The current called party network logon device is determined 40 by comparing identity of the called party, which is stored in a memory, with a list of persons currently logged onto the computer network and the network identifier for the device with which they logged on to the computer network.

If no current logon device is identified, then the current called party default telephone number is determined 42 by comparing the identity of the called party, stored in a memory, with a list of default telephone numbers indexed by called party. If no default telephone number is available then the call is transferred to the operator 36 and the call is answered by an operator 38. If a default telephone number is determined 42 then the call is forwarded to the telephone number 50 and the call is answered 56.

If the current called party network logon device is determined then the telephone number associated with the current called party network logon device is determined 44 by comparing the identity of the logon device with a list of telephone numbers indexed by logon device stored in a memory. Other factors including time of day, day of the week, date, and/or the identity of the calling party may be used to determine the forwarding number by providing additional indexing criteria. The call is then forwarded to the identified telephone number 50. If no telephone number is associated with the current logon device, then the call is forwarded to a voice messaging system 46 and a message is recorded 48.

If the forwarded call is not answered, then an alternate forwarding number is determined 52 and the call is forwarded to the alternate telephone number 54. The alternate forwarding number is determined 52 in the same fashion as the telephone number associated with the current called party network logon device is determined 44 and additional factors may apply to the determination of the telephone number to which the call should be forwarded. If there is no answer, then a second alternative forwarding number will be identified 52 and the call is forwarded 54 to the second alternative forwarding number. If there is no alternative forwarding number available, the call is forwarded to a voice messaging system 46 and a message is recorded 48.

In FIG. 3 a telephone call is received 58 and the identity of the called party is determined 60. If the called party can not be identified, the call is transferred to an operator 62 and the call is answered by an operator 64.

If the called party is identified, then the system checks to see if calls are being forwarded 66. If calls are being forwarded, then a list of potential forwarding numbers will be determined 68. The list of potential forwarding numbers

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can be based on one or more preprogrammed criteria, including the identity of the called party's current or most recent network logon device, day of the week, date, time of day, and/or the identity of the caller. The caller is then presented with a list of potential forwarding telephone numbers. These numbers may be presented as locations ("home phone, car phone, cell phone") or the caller may be offered options to "try another location or leave a message". As discussed above, different lists may be presented to different callers based on their identity or the source of origin of their call, and the lists of potential forwarding numbers may be effected by the time of day or other criteria. The caller then selects the telephone number (location) they want the call forwarded to. This selection may be made by pressing a key on the telephone keypad or speaking the selection into the receiver or, if the caller is connected via computer-telephone integration, by selecting a screen item with a mouse or pressing a key. The selection signal is received 72 and the call is transferred to the telephone number associated with the selection signal 74.

If calls are not being forwarded 66, then the call is transferred 74 to the originally dialed telephone number or the extension to which a PBX had transferred the call.

If there is no answer at the originally dialed telephone number, then the call will be forwarded to voice messaging 78 and a message will be recorded 80. If there is no answer at a forwarded telephone number, then other potential forwarding numbers will be identified 76. If there are other potential forwarding numbers, then a second list of potential forwarding numbers will be determined 68 and presented to the caller 70 and the forwarding process will be repeated. If there are no other potential forwarding telephone numbers or calls are not being forwarded, then the call will be forwarded to a voice messaging system 78 and a message recorded 80.

In FIG. 4 a telephone call is received 84 and the identity of the called party is determined 86. If the called party can not be identified, the call is transferred to an operator 88 and the call is answered by an operator 90.

If the called party is identified, then the system checks to see if calls are being forwarded 92. If calls are being forwarded, then a voice message from the caller is recorded 94. The caller's message is then forwarded to the called party's forwarding telephone number 96. If the telephone is answered, the caller's message is played for the called party 98. A selection signal is received from the called party 100 and the call is transferred to the telephone number associated with the selection signal 104. In the preferred embodiment, the called party is presented with a list of potential forwarding numbers, including transferring the call to the called party or to a voice messaging system. The list of potential forwarding numbers can be based on one or more preprogrammed criteria including the identity of the called party's current or most recent network logon device, day of the week, date, time of day, the source of origin of the call, and/or the identity of the caller.

If calls are not being forwarded 92, then the default telephone number is determined 102 and the call is forwarded to the default number 104. If there is no answer at the called party forwarding number 96 or the telephone number to which a call has been forwarded 104, then the call is forwarded to a voice messaging system 106 and a message is recorded 108.

In FIG. 5 a telephone call is received 112 and the identity of the called party is determined 114. If the called party can not be identified, the call is transferred to an operator 116 and the call is answered by an operator 118.

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If the called party is identified, then the system checks to see if calls are being forwarded 120. If calls are being forwarded, then a "ring no answer" signal is simulated and played back to the telephone network 122. The control signals provided by the telephone network in response to the "ring no answer" signal are intercepted and recorded 124. The signals can be in band DTMF tones, some other in band signalling system, or an out of band signalling system. If out of band tones are used the signalling line must be monitored as well as the communications line. The telephone number associated with the called party's current network logon device is determined 126, and the call is forwarded to that telephone number 130. Alternatively the call could be forwarded to a telephone number based upon some criteria other than the called party's current logon location.

If calls are not being forwarded 120, then the default telephone number is determined 128 and the call is transferred to that number 130. If there is no answer at that number, the prior art voice message system will record a message as usual.

If no forwarding telephone number is determined 126, then the recorded control signals are played to the voice message system 132 and the call is transferred to the voice message system 134. The voice message system responds as if there had been no interruption in the call and records a voice message 136 as if the "ring no answer" control signals had been received directly from the telephone network.

From the foregoing teachings, it can be appreciated by one skilled in the art that a new, novel, and nonobvious telecommunication management system has been disclosed. It is to be understood that numerous alternatives and equivalents will be apparent to those of ordinary skill in the art, given the teachings herein, such that the present invention is not to be limited by the foregoing description but only by the appended claims.

I claim:

1. A method for managing a telecommunications system in which call forwarding is determined by whether a computer terminal is logged into a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining with a server the identity of a called party to whom said call should be directed;
- c) identifying with the server one of a plurality of network logon devices associated with said called party that is logged-on to said computer network;
- d) identifying with the server a telephone number associated with said logged-on network logon device; and
- e) forwarding the call to said telephone number, the forwarded call bypassing the server.

2. The method of claim 1, wherein said call is directed to a voice messaging system if none of said plurality of network logon devices for the called party is identified as logged-on.

3. The method of claim 1, wherein said call is directed to a telephone number associated with the previously logged-on called party network logon device if no currently logged-on network logon device is identified.

4. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers and the determination of which telephone number said call is forwarded to is based upon the date and time said call is received.

5. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers

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and the determination of which telephone number said call is forwarded to is based upon whether said call originated from the publicly switched telephone network or an internal extension.

6. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers and the determination of which telephone number said call is forwarded to is based upon a set of predefined rules.

7. The method of claim 1, wherein said call may be forwarded to any one of a plurality of telephone numbers and the determination of which telephone number said call is forwarded to is based upon incoming signals accompanying the call which signals identify the calling party.

8. The method of claim 1 wherein the forwarding the call to said telephone number comprises forwarding the call via a publicly switched telephone network.

9. A method for managing a telecommunications system in which call forwarding is determined by whether a computer terminal is logged into a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining the identity of a called party to whom said call should be directed;
- c) determining whether one of a plurality of network logon devices associated with said called party is logged onto said computer network;
- d) if one of the network logon devices is logged onto said computer network, then identifying a telephone number associated with said logged-on network logon device and forwarding the call to said telephone number; and
- e) if none of said plurality of network logon devices is logged onto said computer network, then directing the call to a default telephone number.

10. A method for managing a telecommunications system in which call forwarding is determined by whether a computer terminal is logged into a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining the identity of a called party to whom said call should be directed;
- c) determining whether one of a plurality of network logon devices associated with said called party is logged onto said computer network;
- d) if one of the network logon devices is logged onto said computer network, then identifying a telephone number associated with said logged-on network logon device and forwarding the call to said telephone number; and
- e) if none of said plurality of network logon devices is logged onto said computer network, then directing said call to a telephone number associated with a previously logged-on network logon device for a specified period of time after said previously logged-on network logon device logs off said computer network.

11. A method for managing a telecommunications system in which call forwarding is controlled by a calling party, comprising:

- a) receiving a call from the calling party on a telephone network requesting communications with a called party;
- b) presenting said calling party with a menu listing a plurality of locations to which the call can be forwarded;
- c) receiving a selection signal from said calling party identifying the location to which said call is to be forwarded; and

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d) forwarding said call to a forwarding telephone number associated with said selection signal.

12. The method of claim 11, wherein said menu listing is modified based upon the identity of the calling party.

13. The method of claim 11, wherein said menu listing is modified based upon the time at which the call is received.

14. The method of claim 11, wherein said menu listing is modified based upon the day and date on which the call is received.

15. The method of claim 11, wherein said menu listing includes the option of leaving a message with a voice mail system.

16. The method of claim 11, further comprising the step of:

forwarding said call to a voice messaging system if there is no answer at the telephone number to which the call was forwarded.

17. A method for managing a telecommunications system in which call forwarding is controlled by the called party, comprising:

- a) receiving an indication that calls directed to a first communications device should be forwarded to a second communications device;
- b) receiving a call from a calling party on a telephone network directed to said first communications device;
- c) recording a calling-party message from said calling party;
- d) forwarding said calling-party message to said second communications device;
- e) playing said calling-party message at said second communications device;
- f) receiving a selection signal from said second communications device indicating a third communications device to which said call is to be forwarded; and
- g) forwarding said call to said third communications device.

18. The method of claim 17, wherein said second communications device is selected from a plurality of communications devices based upon the time at which the call is received.

19. The method of claim 17, wherein said second communications device is selected from a plurality of communications devices based upon the day and date on which the call is received.

20. The method of claim 17, wherein said third communications device is an auto attendant system.

21. The method of claim 17, wherein said third communications device is a voice messaging system.

22. The method of claim 17, further comprising the step of:

forwarding said call to a voice messaging system if there is no response from said second communications device.

23. The method of claim 17, further comprising the step of:

presenting at said second communications device a menu listing a plurality of devices to which the call can be forwarded.

24. The method of claim 23, wherein said menu listing is modified based upon the identity of the calling party.

25. The method of claim 23, wherein said menu listing is modified based upon the time at which the call is received.

26. The method of claim 23, wherein said menu listing is modified based upon the day and date on which the call is received.

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27. The method of claim 23, wherein said menu listing includes the option of forwarding the call to a voice mail system.

28. A method for managing a telecommunications system, which includes a voice messaging system, in which call forwarding is determined by whether a computer terminal is logged onto a computer network, comprising:

- a) receiving a call on a telephone system which is coupled to a computer network;
- b) determining the number of a called party's extension to which said call should be directed;
- c) simulating a "ring no answer" of said extension number by sending a "ring no answer" signal to the telephone system;
- d) intercepting control signals provided by the telephone system to the voice messaging system in response to the "ring no answer" signal;
- e) recording the control signals which are provided by the telephone system to the voice messaging system in response to the "ring no answer" signal;
- f) identifying which one of a plurality of network logon devices associated with said called party is logged-on to said computer network;
- g) if no network logon device for the called party is identified as logged-on, playing the control signals to the voice messaging system, in order to transfer the call to said voice messaging system;
- h) if a network logon device is identified as logged-on, identifying a telephone number associated with said network logon device and forwarding the call to said telephone number.

29. The method of claim 28, wherein said call is directed to a default telephone number if none of said plurality of network logon devices for the called party is identified as logged-on.

30. The method of claim 28, wherein said call is directed to a telephone number associated with the previously logged on called party network logon device if no currently logged on network logon device is identified.

31. The method of claim 28, wherein said call is directed to a telephone number associated with the previously logged on called party network logon device for a specified period of time after said network logon device logs off the network if no currently logged-on network logon device is identified.

32. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon the date and time said call is received.

33. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon whether said call originated from the publicly switched telephone network.

34. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon a set of predefined rules.

35. The method of claim 28, wherein said call is forwarded to one of a plurality of telephone numbers based upon the identity of the calling party.

36. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party and that includes a telephone system coupled to a publicly switched telephone network, the server operable to:

- a) receive information from the telephone system regarding an incoming call directed to the called party;
- b) identify the called party from the information;

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c) identify one of the network logon devices that is logged onto the computer network;

d) identify a telephone number associated with the logged-on network logon device; and

e) control the telephone system to forward the call to the telephone number, the forwarded call bypassing the server.

37. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party and that includes a telephone system, the server operable to:

- a) receive information from the telephone system regarding an incoming telephone call directed to the called party;
- b) identify the called party from the information;
- c) determine whether one of the network logon devices is logged onto the computer network;
- d) if one of the network logon devices is logged onto the computer network, then identify a telephone number associated with the logged-on network logon device and control the telephone system to forward the call to the telephone number; and
- e) if none of the network logon devices are logged onto the computer network, then control the telephone system to forward the call to a default telephone number.

38. A server for managing a telecommunications system that includes a computer system having a plurality of network logon devices associated with a called party and that includes a telephone system, the server operable to:

- a) receive information from the telephone system regarding an incoming telephone call directed to the called party;
- b) identify the called party from the information;
- c) determine whether one of the network logon devices is logged onto the computer network;
- d) if one of the network logon devices is logged onto the computer network, then identify a telephone number associated with the logged-on network logon device and control the telephone system to forward the call to the telephone number; and
- e) if none of the network logon devices is logged onto the computer network and if the most recently logged-on network logon device has been logged off the computer network for no longer than a predetermined time, then direct the call to a telephone number associated with the most recently logged-on network logon device.

39. A server for managing a telecommunications system that includes a telephone system, the server operable to:

- a) receive information from the telephone system regarding an incoming telephone call from a calling party, the call directed to a called party;
- b) present the calling party with a menu listing a plurality of locations to which the call can be forwarded;
- c) receive from the calling party a selection signal identifying the location to which the call is to be forwarded; and
- d) control the telephone system to forward the call to a telephone number associated with the identified location.

40. A server for managing a telecommunications system that includes a telephone system, the server operable to:

- a) receive an indication that the telephone system is to forward calls directed to a first communications device to a second communications device;

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- b) receive information from the telephone system regarding an incoming telephone call from a calling party, the call directed to the first communications device;
 - c) record a calling-party message from the calling party;
 - d) control the telephone system to forward the calling-party message to the second communications device;
 - e) play the calling-party message at the second communications device;
 - f) receive a selection signal from the second communications device indicating that the call is to be forwarded to a third communications device; and
 - g) control the telephone system to forward the call to the third communications device.
- 41. A server for managing a telecommunications system** 15
that includes a computer system having a plurality of network logon devices associated with a called party, a telephone system, and a voice messaging system coupled to the telephone system, the server operable to:
- a) receive information from the telephone system regarding an incoming telephone call directed to the called party;

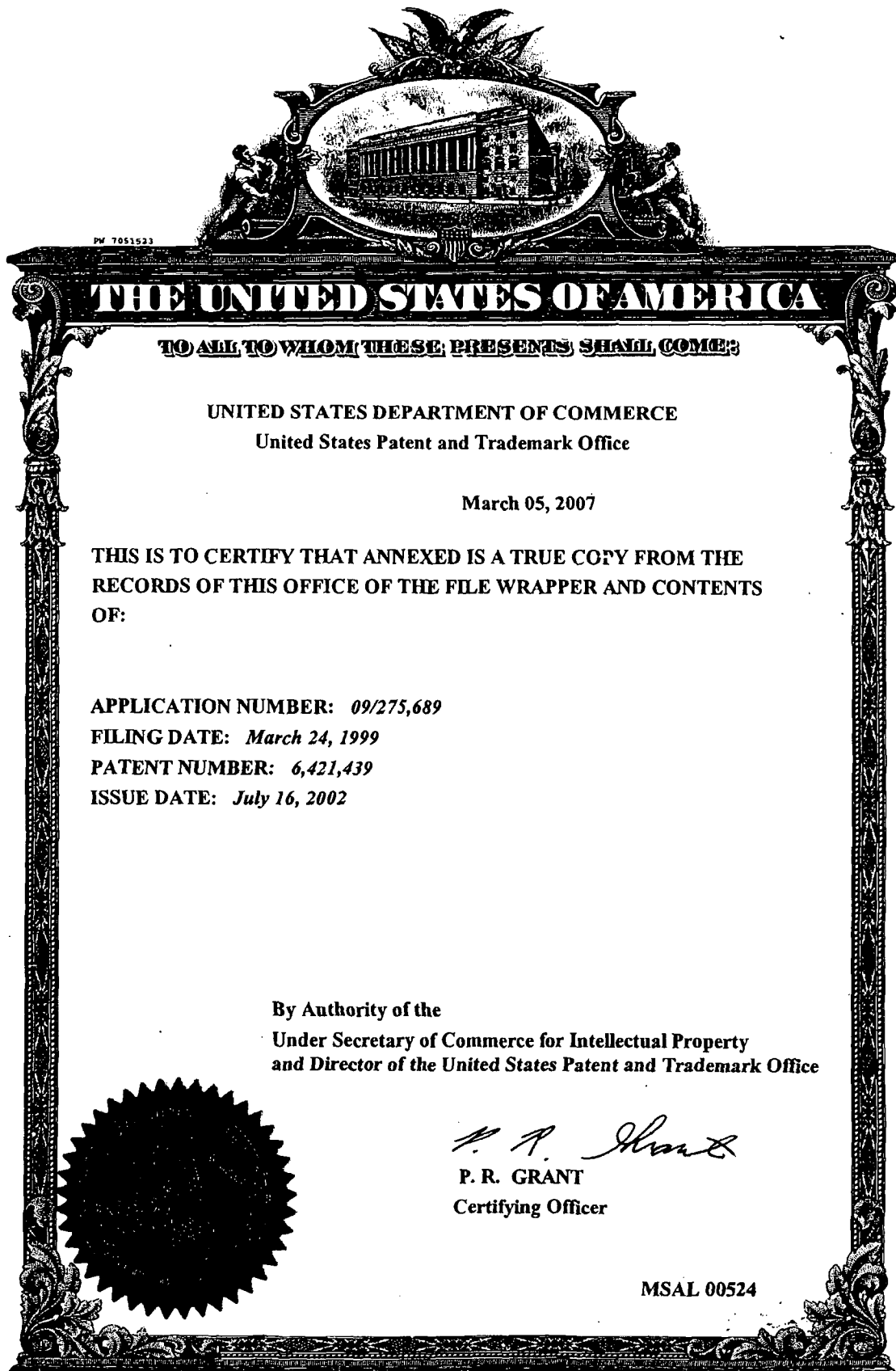
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- b) determine the called party's telephone number to which the call is to be directed;
- c) simulate a "ring no answer" of the telephone number by sending a "ring no answer" signal to the telephone system;
- d) intercept control signals provided by the telephone system to the voice messaging system in response to the "ring no answer" signal;
- e) record the intercepted control signals;
- f) determine whether one of the network logon devices is logged onto the computer network;
- g) if no network logon device is logged-on, then transfer the call to the voice messaging system by playing the recorded control signals to the voice messaging system; and
- h) if a network logon device is logged-on, then identify a forwarding telephone number associated with the network logon device and control the telephone system to forward the call to the forwarding telephone number.

* * * * *

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EXHIBIT 3



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

**UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office**

March 05, 2007

**THIS IS TO CERTIFY THAT ANNEXED IS A TRUE COPY FROM THE
RECORDS OF THIS OFFICE OF THE FILE WRAPPER AND CONTENTS
OF:**

**APPLICATION NUMBER: 09/275,689
FILING DATE: March 24, 1999
PATENT NUMBER: 6,421,439
ISSUE DATE: July 16, 2002**

**By Authority of the
Under Secretary of Commerce for Intellectual Property
and Director of the United States Patent and Trademark Office**

P. R. Grant
**P. R. GRANT
Certifying Officer**

MSAL 00524

A PTO/SB/05 (2/98)

03/24/99

UTILITY
PATENT APPLICATION
TRANSMITTAL

(Only for nonprovisional applications under 37 CFR § 1.53(b))

Attorney Docket No. **664005.4**

First Inventor or Application Identifier **Stephen Mitchell Liffick**

Title **SYSTEM AND METHOD FOR USER AFFILIATION TELEPHONE NETWORK**

Express Mail Label No. **EM150272273US**

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Box Patent Application Assistant Commissioner Washington, D.C. 20261

1. ☒ General Authorization Form & Fee Transmittal (Submit an original and a duplicate for fee processing)

2. ☒ Specification [Total Pages] **36**
(preferred arrangement set forth below)

- Descriptive Title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R & D
- Reference to Microfiche Appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings (if filed)
- Detailed Description
- Claim(s)
- Abstract of the Disclosure

3. ☒ Drawing(s) (35 USC 113) [Total Sheets] **8**

4. Oath or Declaration [Total Pages] **2**

a. ☒ Newly executed (original or copy)

b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed)

i. ☐ **DELETION OF INVENTOR(S)**
Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b)

5. ☐ Incorporation By Reference (useable if box 4b is checked)
The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered to be part of the disclosure of the accompanying application and is hereby incorporated by reference therein.

6. ☐ Microfiche Computer Program (Appendix)

7. Nucleotide and Amino Acid Sequence Submission (if applicable, all necessary)

a. ☐ Computer-Readable Copy

b. ☐ Paper Copy (identical to computer copy)

c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

8. ☒ Assignment Papers (cover sheet & document(s))

9. ☐ 37 CFR 3.73(b) Statement (when there is an assignee) ☒ Power of Attorney

10. ☐ English Translation Document (if applicable)

11. ☐ Information Disclosure Statement (IDS)/PTO-1449 ☐ Copies of IDS Citations

12. ☐ Preliminary Amendment

13. ☒ Return Receipt Postcard

14. ☐ Small Entity Statement(s) ☐ Statement filed in prior application, Status still proper and desired

15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed)

16. ☒ Other: Certificate of Express Mail
Check for \$1436

17. If a CONTINUING APPLICATION, check appropriate box and supply the requisite information below and in a preliminary amendment

☐ Continuation ☐ Divisional ☐ Continuation-In-Part (CIP) of prior Application No.: _____

Prior application information: Examiner _____ Group / Art Unit _____

☐ Claims the benefit of Provisional Application No. _____

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Respectfully submitted,

TYPED or PRINTED NAME Michael J. DonohueREGISTRATION NO. 35,859SIGNATURE Michael J. DonohueDate March 24, 1999

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CLAIMS

What is claimed is:

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1. A system for user specification of call processing in a telephone network having a user telephone coupled to the telephone network, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing;

a computer network access port used by the telephone network to access the data structure; and

a controller to receive an incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

2. The system of claim 1 wherein the data structure stores the user-selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the origination identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data.

3. The system of claim 2 wherein the identification data is telephone automatic number identification data.

4. The system of claim 2 wherein the identification data is electronic mail identification data.

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Application/Control Number: 09/275,689
Art Unit: 2642

Page 2

DETAILED ACTION

Claim Objections

1. Claim 34 is objected to because of the following informalities: claim 34 depends from claim 35 which depends from claim 34. Appropriate correction is required. For examination purpose, it is assumed that claim 34 depends from claim 28.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-13, 15-25, 27-40, and 42-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Brennan (U.S. Patent No. 5,329,578).

Regarding claims 1, 21, 28, and 38, Brennan teaches a system, method, and a computer readable medium for user specification of call processing in a telephone network having a user telephone (Fig. 1, 15-17) coupled to the telephone network (Fig. 1, 12), the system comprising: a data structure contained within a computer network (Fig. 1b, 10) to store user selectable criteria for call processing (Fig. 1b, 24); a computer network access port used by the telephone network to access the data structure (Fig. 1c); and a controller (Fig. 1c, 48) to receive an incoming call designated for the user telephone 15-17 and to process the incoming call in accordance with the

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Art Unit: 2642

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user-selectable criteria (column 3, line 54 through column 4, line 18), the controller accessing the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call (column 4, lines 19-35).

Regarding claims 2, 31, and 43, Brennan further teaches the system wherein the data structure stores the user selectable criteria in association with caller identification data and the incoming call includes origination identification data associated therewith, the controller using the identification data to identify user-selectable criteria stored in the data structure in association with the caller identification data (column 5, lines 23-46).

Regarding claim 3, Brennan further teaches the system wherein the identification data is telephone automatic number identification data (column 3, lines 62-68).

Regarding claims 5, 22, 32, and 44, Brennan further teaches the system wherein the user-selectable criteria indicates permission to process the incoming call (Table 1.0), the controller processing the incoming call in accordance with the permission to generate a ring signal at the user telephone (column 5, lines 60-68).

Regarding claims 6, 23, 33, and 45, Brennan further teaches the system wherein the user-selectable criteria indicates no permission to process the incoming call, the controller blocking the incoming call and not generating a ring signal at the user telephone (when the caller is directed to voice mail, the user telephone will not be rung).

Regarding claims 7, 19, 34, and 46, Brennan further teaches the system wherein the controller blocking the incoming call generates a busy signal at an origination telephone from which the incoming call is originated (column 4, lines 11-18).

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AI

1. (Amended) In an environment where subscribers call a user over a telephone network, wherein a user telephone is coupled with the telephone network, a system for processing an incoming call from a subscriber to a user in the telephone network according to user specifications, the system comprising:

a data structure contained within a computer network to store user-selectable criteria for call processing, wherein the data structure stores the user-selectable criteria in one or more lists that are used in filtering an incoming call and wherein some of the one or more lists are used to filter the incoming call according to current activity of subscribers on the computer network or according to current activity of the user on the computer network;

a computer network access port used by the telephone network to access the data structure such that the telephone network has access to the one or more lists over the computer network access port; and

a controller to receive the incoming call designated for the user telephone and to process the incoming call in accordance with the user-selectable criteria, the controller accessing the user-selectable criteria in the one or more lists of the data structure via the computer network access port and thereby applying the user-selectable criteria to the incoming call.

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8. (Amended) The system of claim 6, further comprising an outgoing message system having an outgoing message, the controller blocking the incoming call and playing the outgoing message at an origination telephone.

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X

REMARKS

Applicants and applicants' attorney express appreciation to the Examiner for the courtesies extended during the recent interview held on October 17, 2001. The claim amendments made by this paper are consistent with the proposals discussed, and the agreements reached, during the interview.

The Office Action of July 30, 2001, rejected claims 1-3, 5-13, 15-25, 27-40, and 42-51 under 35 § 102(b) as being anticipated by U.S. Patent No. 5,329,578 to Brennan. The Office Action also rejected claims 4, 14, 26, and 41 as being unpatentable over Brennan in view of U.S. Patent No. 6,005,870 to Leung.

The communication services taught by Brennan are illustrated, for example, by Figures 2a-2g and by Figures 3a-3e. Figures 2a-2g describe the flow of information at the caller interface when an individual is calling a user and describe what happens to an incoming call of the caller. Figures 3a-3e describe a user service interface illustrating how a menu is accessed by a user and how a user is able to change or set the user specifications that determine how an incoming call is processed. With regard to Figures 2a-2g, Brennan teaches that the flow of information is fixed and is not dependent on any particular status or activity of the user or of the caller and that the flow of information is determined by the user's requirements for that particular caller.

For example, Brennan teaches that if the incoming call includes calling line identification (CLID), then the profile of the user or subscriber is accessed to determine whether the CLID matches one of the CLIDs of the callers on the user's caller list, which determines how to treat the incoming call. *See* Brennan col. 11, lines 40-45. If the CLID of the caller is present in the caller list, then the special treatment, as indicated in the caller list for that caller, is taken.

Otherwise, the default treatment of an incoming call is assumed in this example. Thus, the treatment of an incoming call is dependent on a caller list that does not change. More specifically, actions or activity of callers on a telephone network or on a computer network have no effect on the caller list or on other user requirements for callers.

This is evident in Brennan, where a user is required to call a special number in order to access and/or alter the user requirements for different callers. See Brennan col. 13, lines 7-15. This is plainly illustrated in Figure 3a, where the user is able to access and change the caller lists and user requirements over the telephone network. Thus, Brennan teaches that the user requirements or the caller lists do not change unless the user expressly changes the user requirements or unless the user specifically requests a system operator to make the changes to the user requirements. See Brennan col. 13, lines 14-16.

In contrast to Brennan, claim 1 as amended recites that the one or more lists used in filtering an incoming call change according to current activity of the subscribers (e.g., persons making the calls), or according to current activity of the user (e.g., intended recipient of the call). In one example, the current activity of the subscriber and/or the user does not typically occur on the telephone network. Instead the current activity of the subscriber and/or the user usually occurs on a computer network. The ability to process an incoming call on a telephone network according to activity on a computer network is not taught or suggested by Brennan.

For at least these reasons and for the reasons discussed at the interview, Brennan does not teach or anticipate claim 1 as amended and claim 1 is believed to be in condition for allowance. For similar reasons, the other independent claims, namely claims 21, 28, and 38, are not taught or anticipated by Brennan and are in condition for allowance. The remaining dependent claims,

EXHIBIT 4



US005329578A

United States Patent [19]

Brennan et al.

[11] **Patent Number:** **5,329,578**[45] **Date of Patent:** **Jul. 12, 1994**[54] **PERSONAL COMMUNICATION SERVICE
WITH MOBILITY MANAGER**

5,239,577 8/1993 Bates et al. 379/201

OTHER PUBLICATIONS

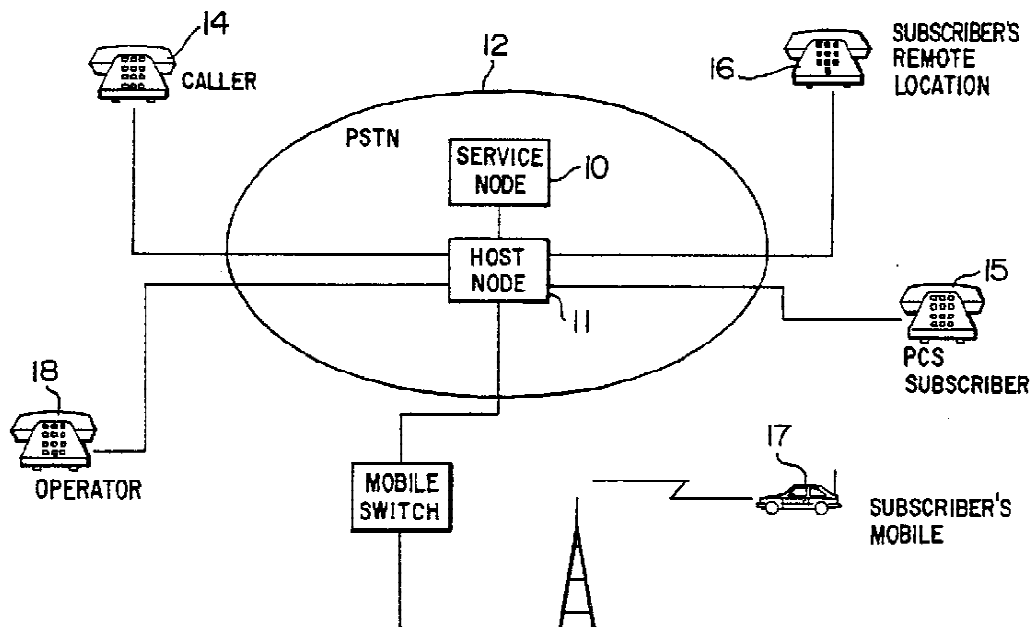
PCT Publication #WO 91/07838—Published May 30, 1991.

Primary Examiner—James L. Dwyer*Assistant Examiner*—Fan Tsang*Attorney, Agent, or Firm*—Jean-Pierre Fortin[75] **Inventors:** Paul M. Brennan, Toronto; Raymond
M. Mark, Mississauga, both of
Canada[73] **Assignee:** Northern Telecom Limited, Montreal,
Canada[21] **Appl. No.:** 887,758[22] **Filed:** May 26, 1992[51] **Int. Cl.⁵** H04M 1/64; H04M 3/42[52] **U.S. Cl.** 379/67; 379/88;
379/89; 379/97; 379/196; 379/201; 379/211[58] **Field of Search** 379/67, 88, 89, 196,
379/97, 201, 207, 210, 211, 212, 213, 214, 217,
374[56] **References Cited****U.S. PATENT DOCUMENTS**

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[57] **ABSTRACT**

A system for providing personal communication services (PCS) is described, wherein a subscriber can tailor the telephone service to provide communication mobility and incoming call management. Calls to a personal number assigned to the subscriber are routed to a PCS service node which will re-route the call according to the subscriber's service profile stored in a database. The service node insures that attempts to communicate with the subscriber are handled with appropriate consideration for who is calling, when the call is made, and the urgency of the call. In addition, the subscriber is given control over how the system will work for them in routing incoming calls.

11 Claims, 17 Drawing Sheets

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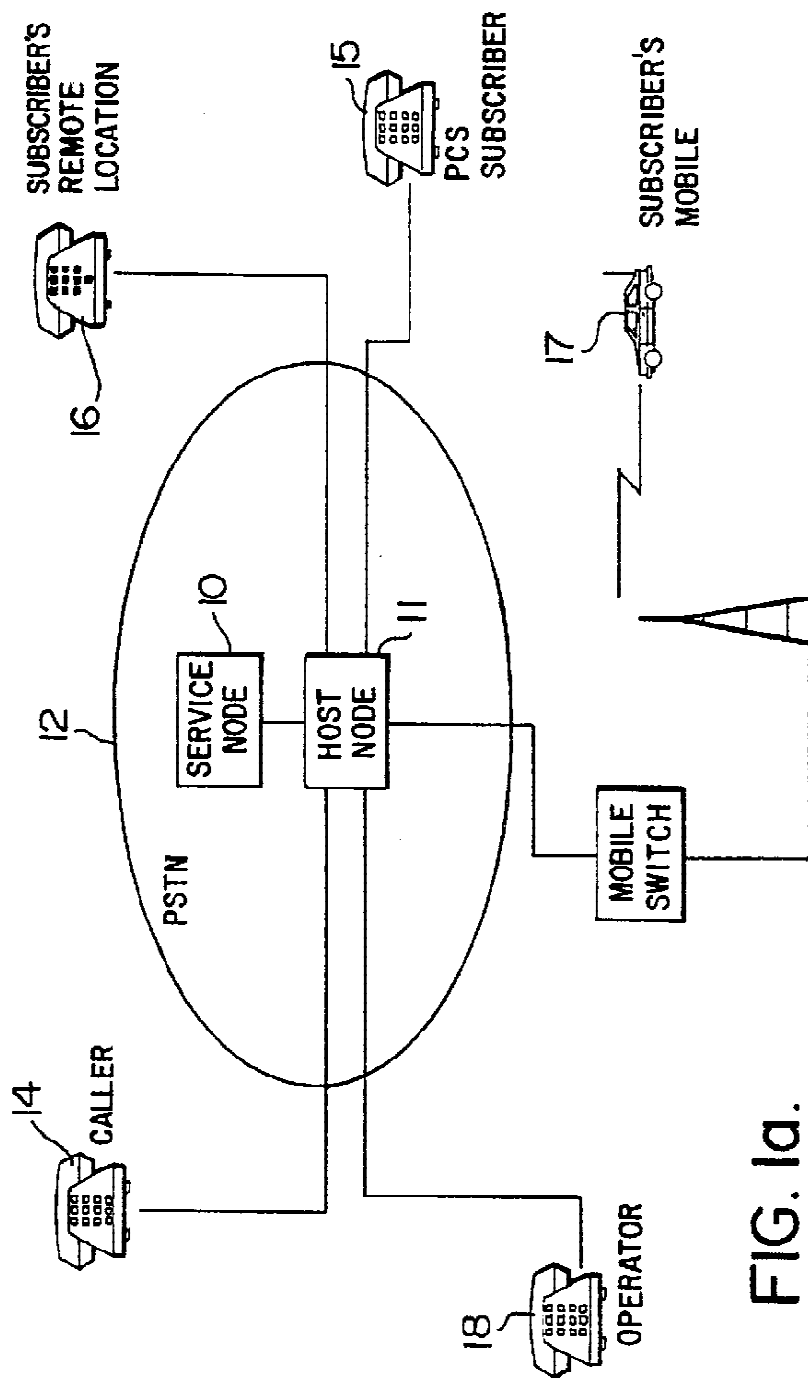


FIG. 1a.

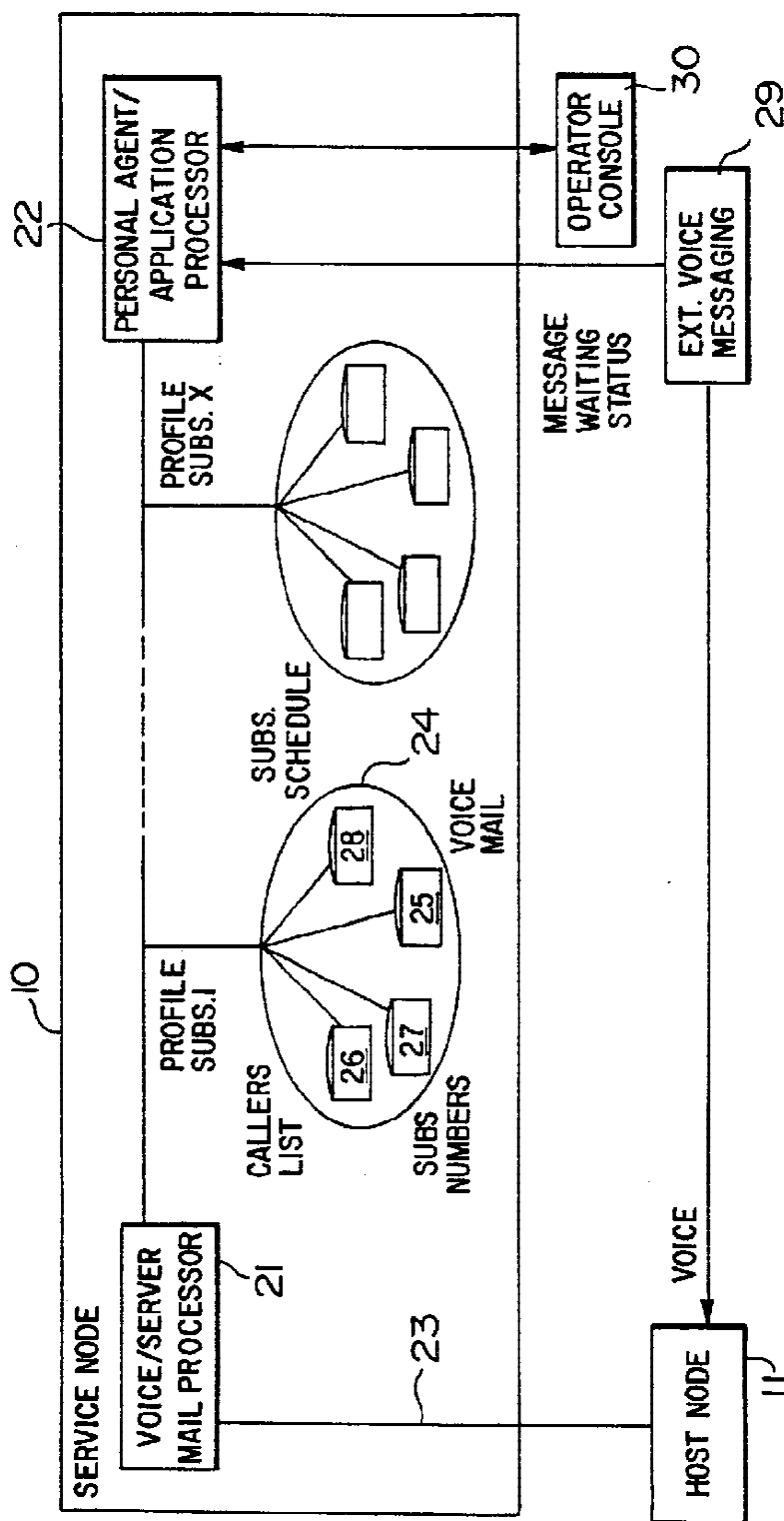


FIG. 1b

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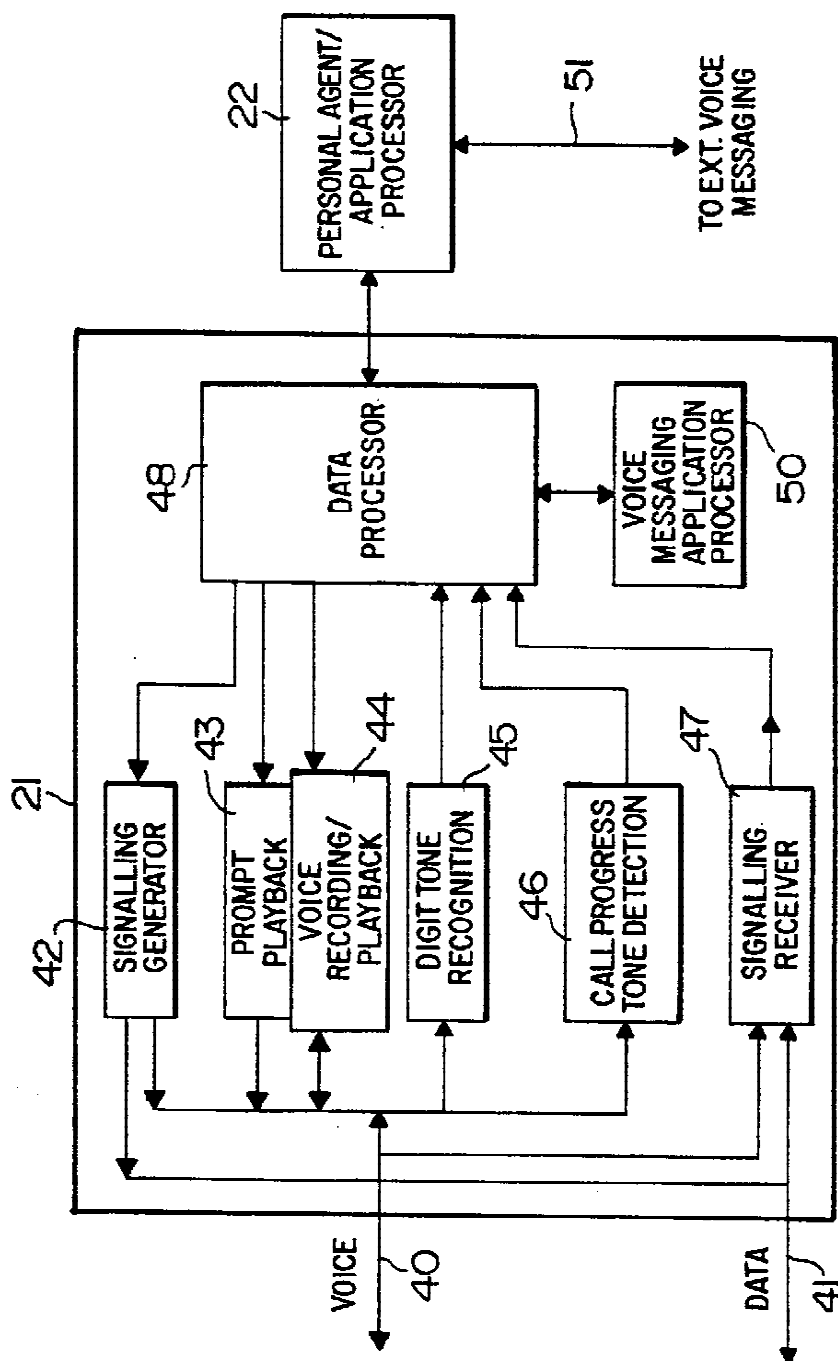


FIG. 1C

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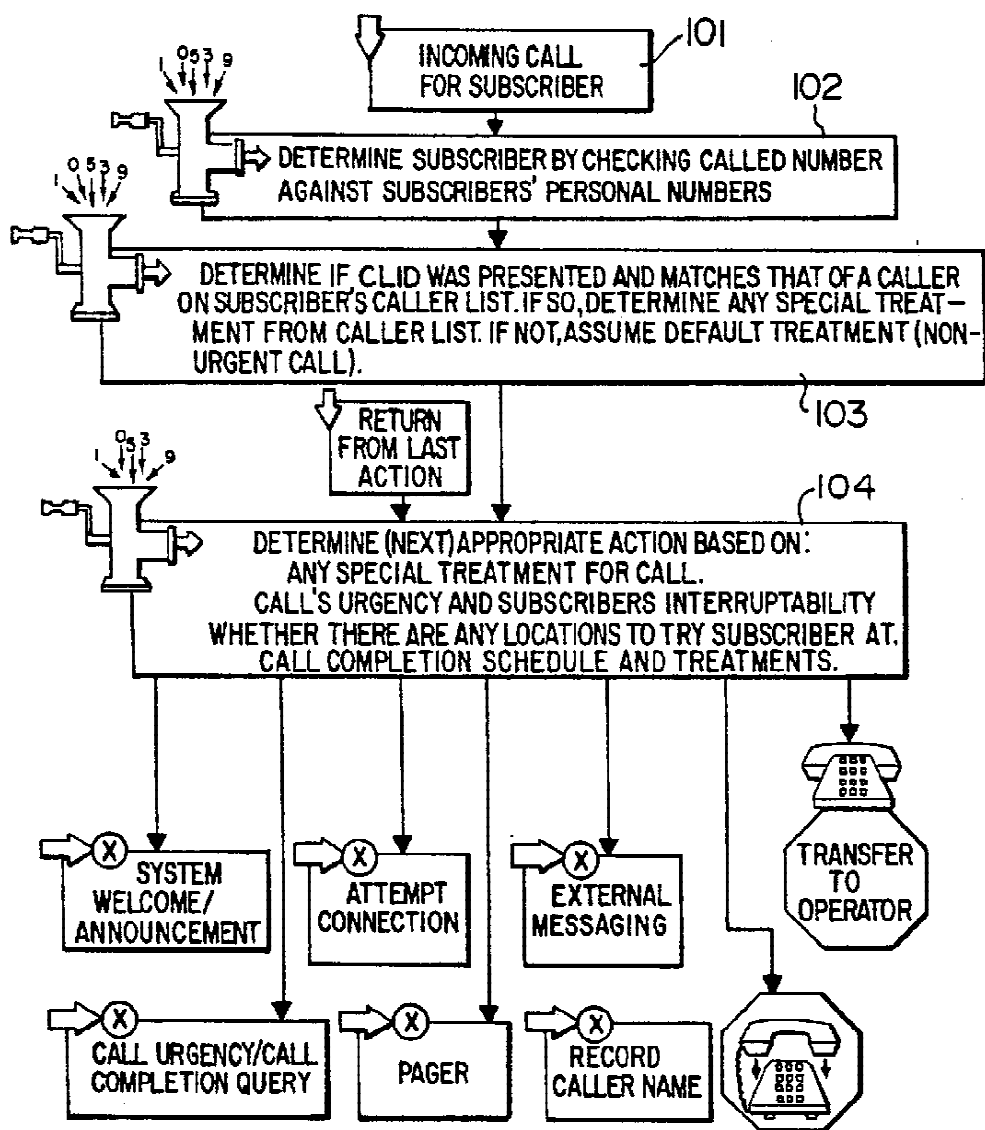


FIG. 2a

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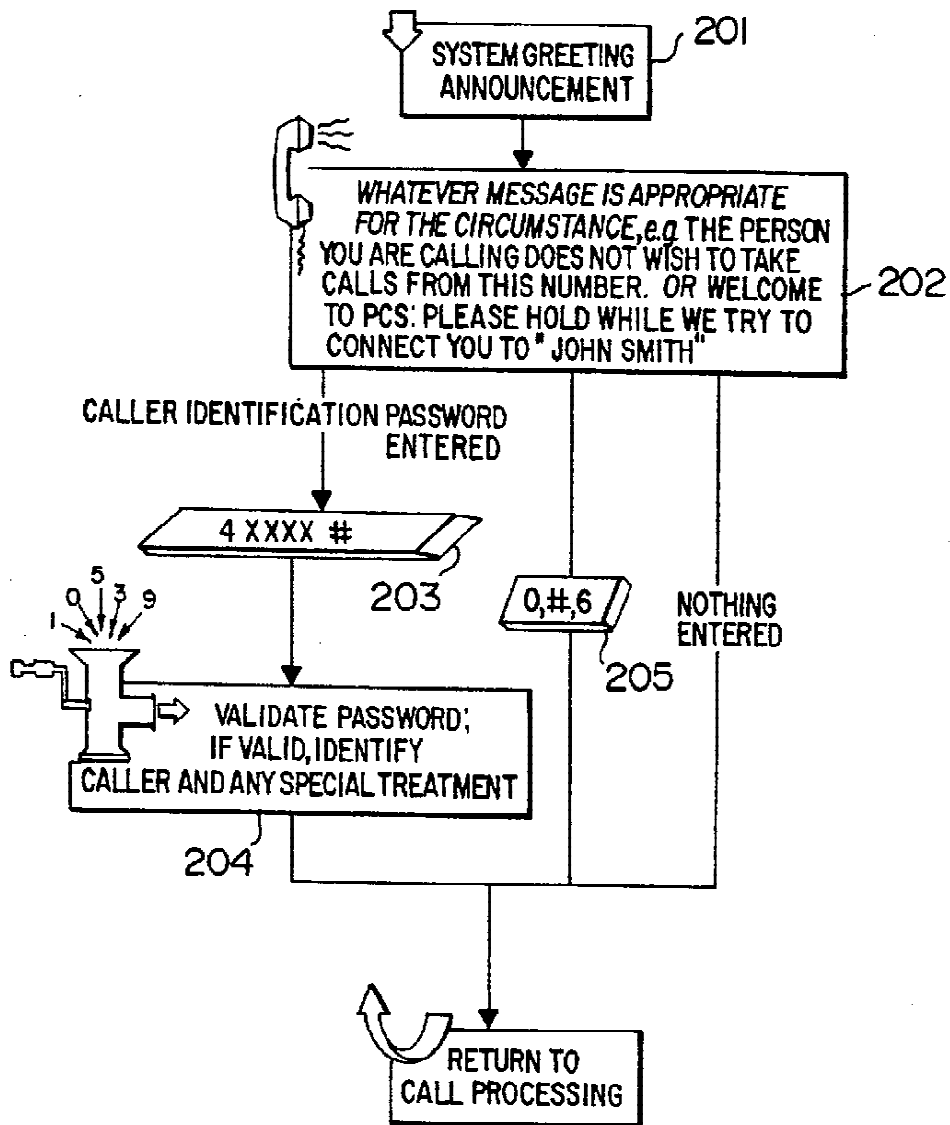


FIG. 2b

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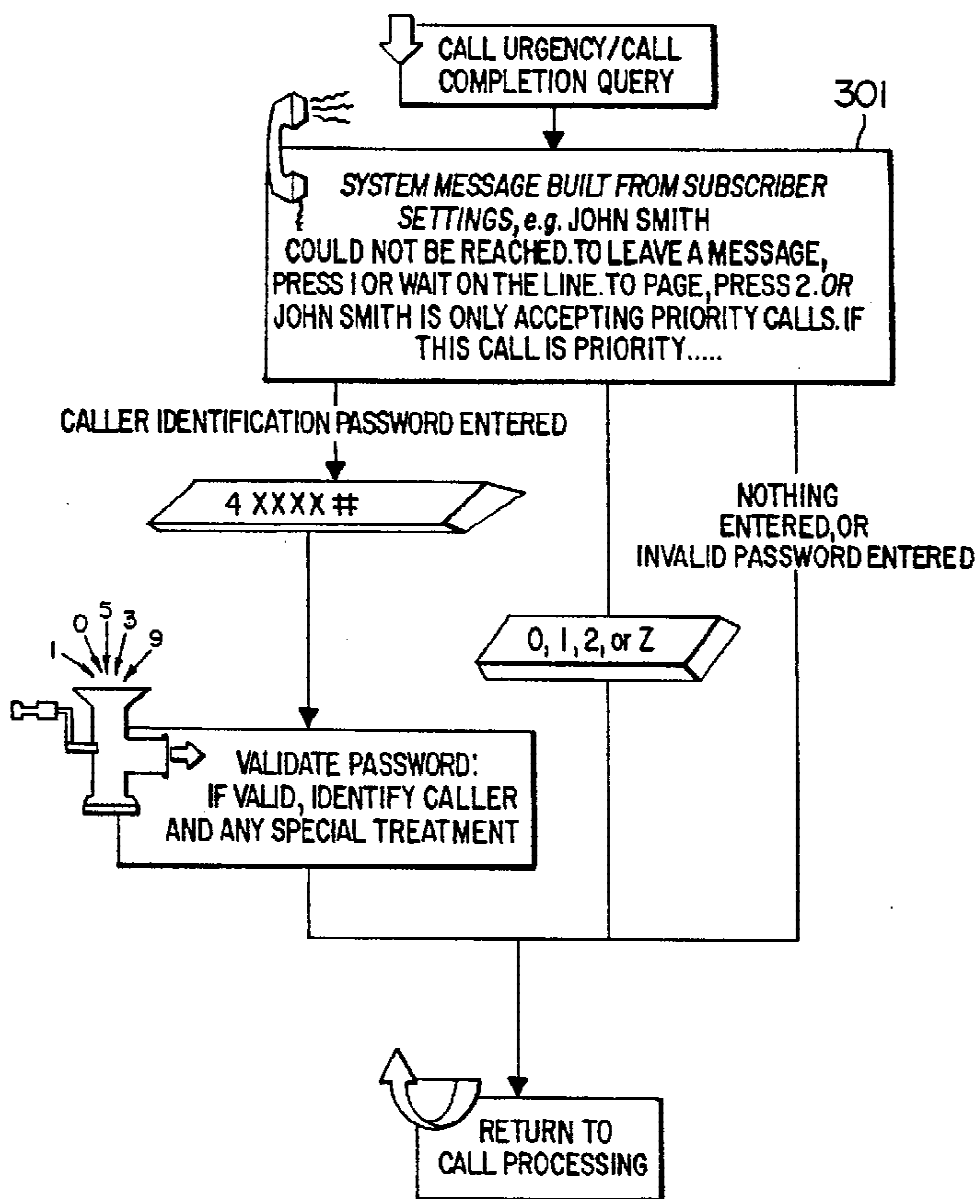


FIG. 2c

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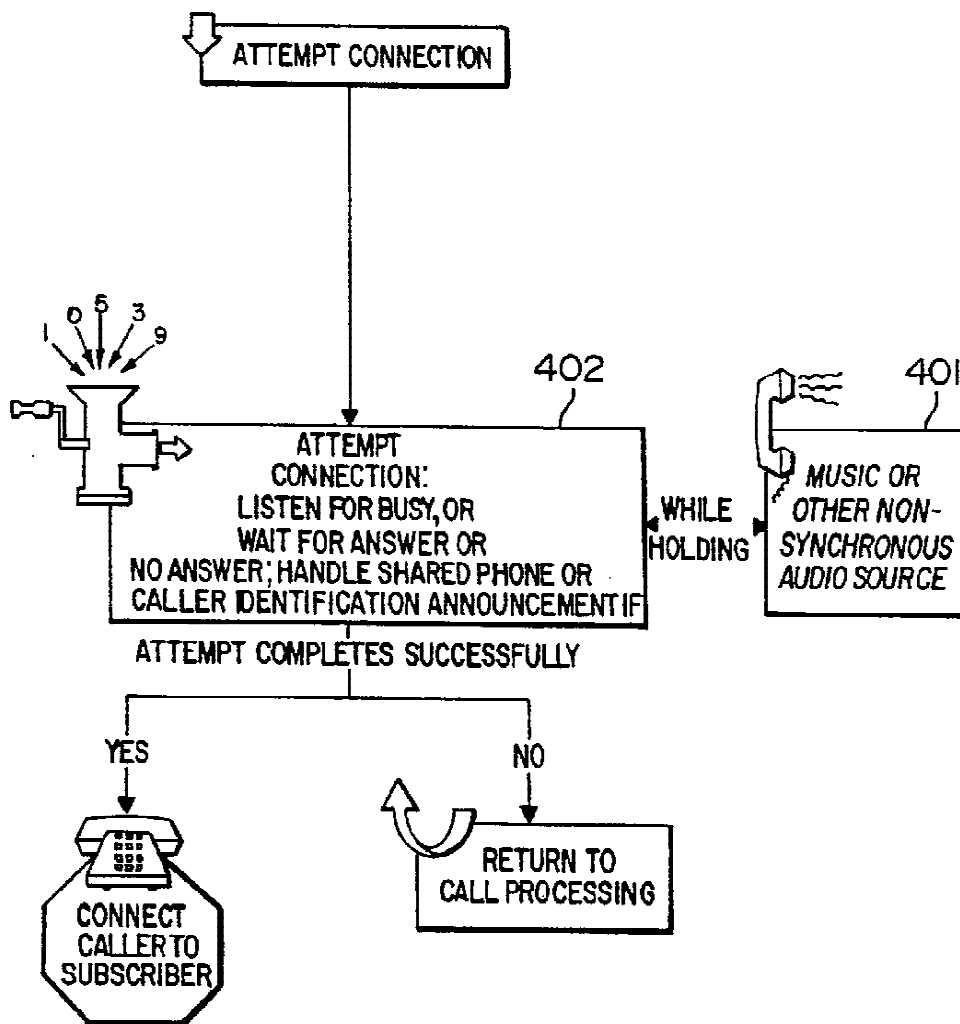


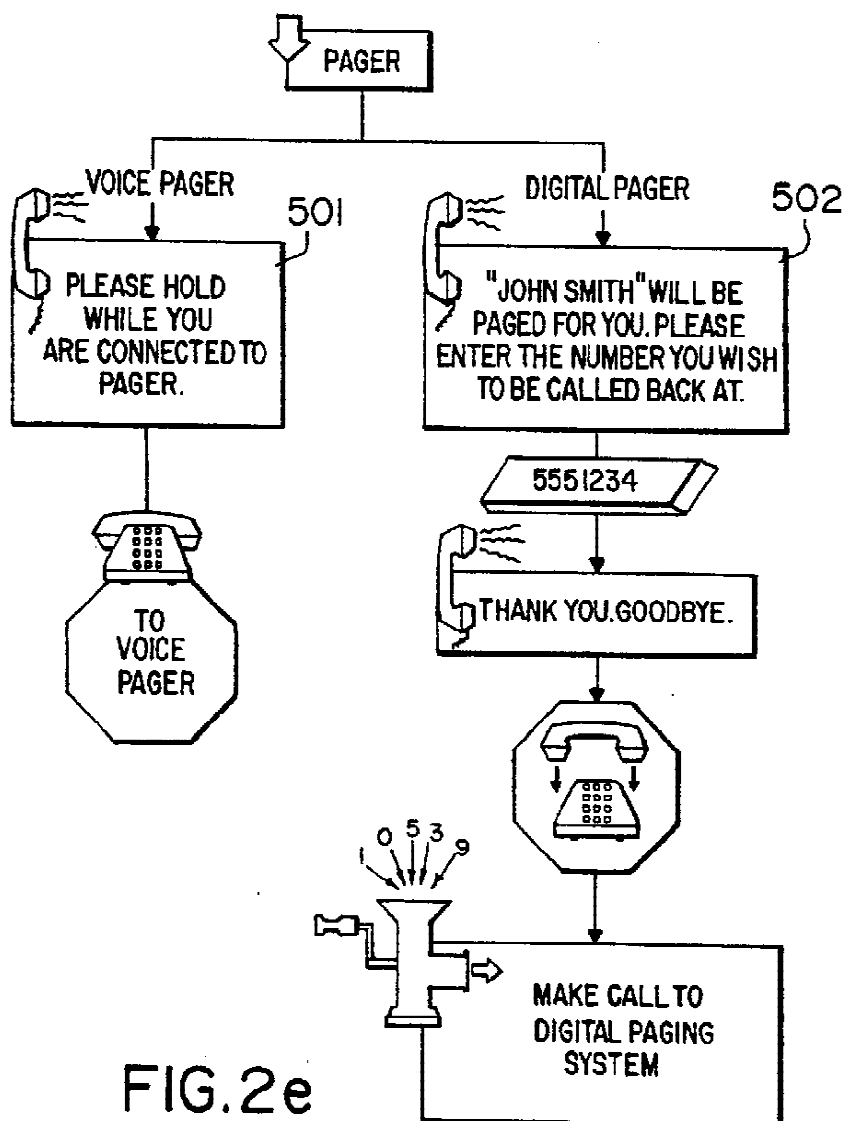
FIG. 2d

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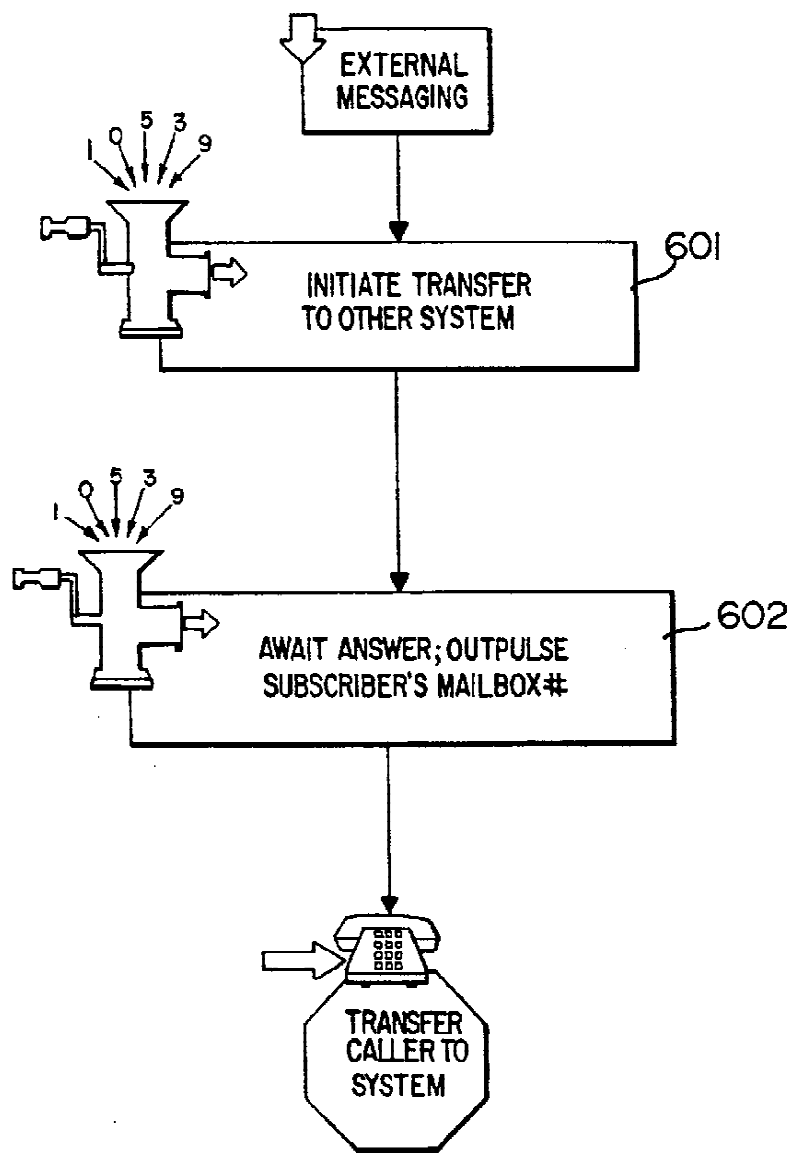


FIG. 2f

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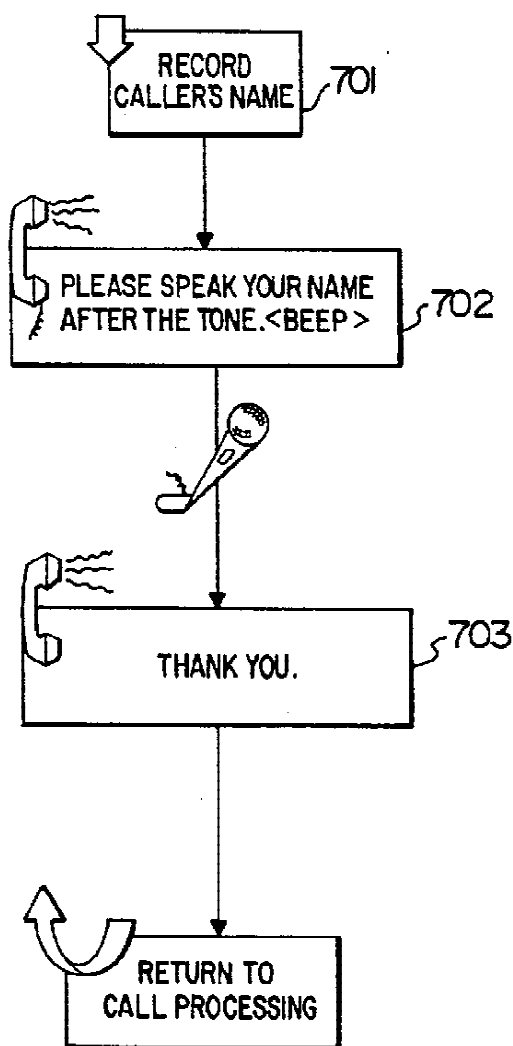


FIG. 2g

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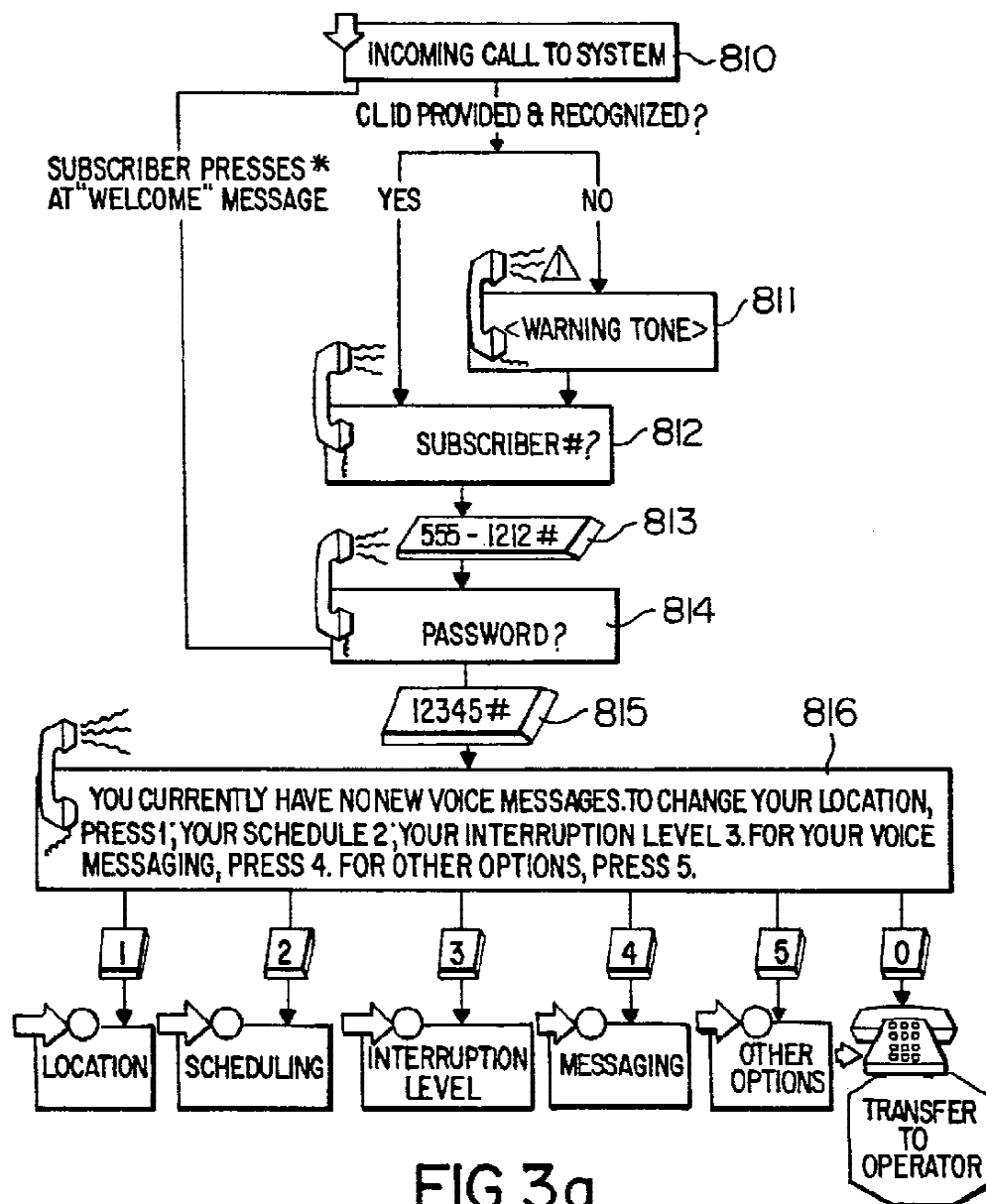


FIG. 3a

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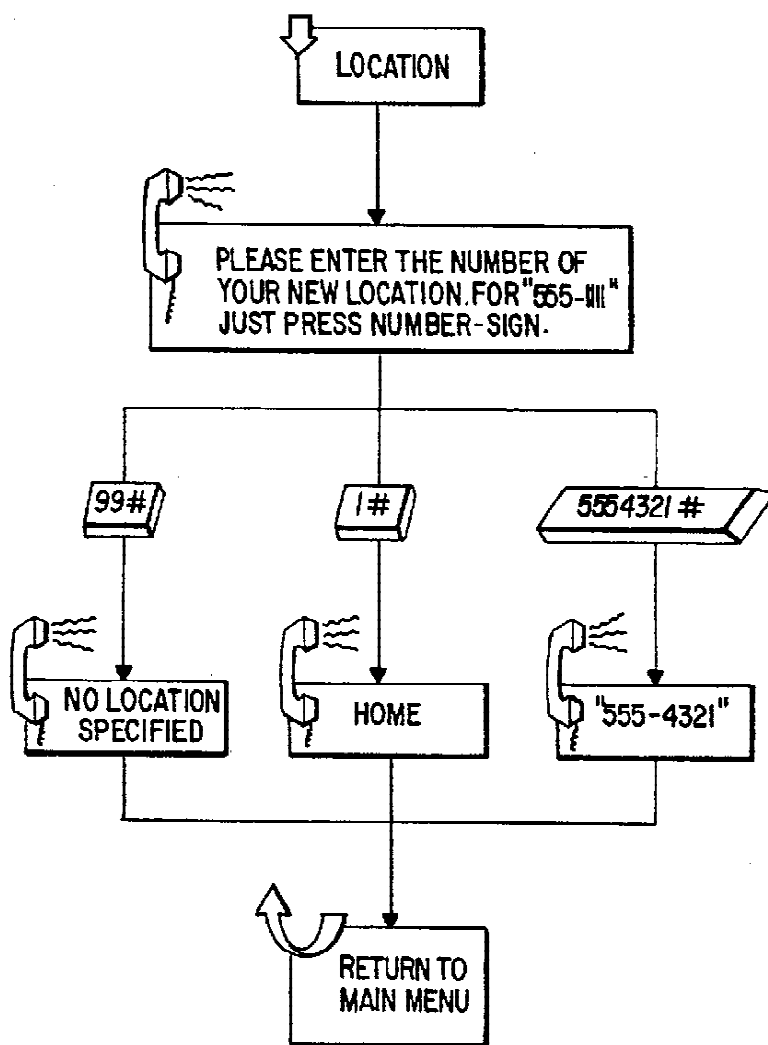


FIG.3b

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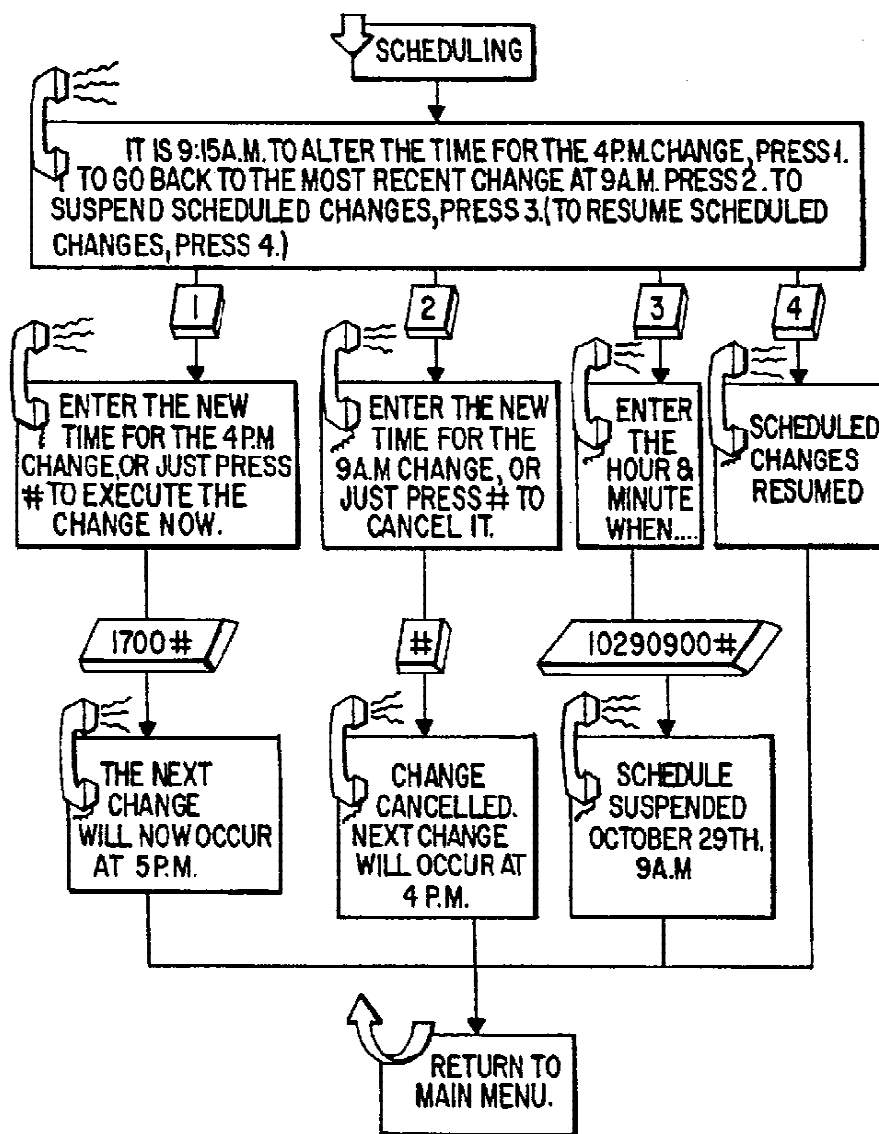


FIG.3c

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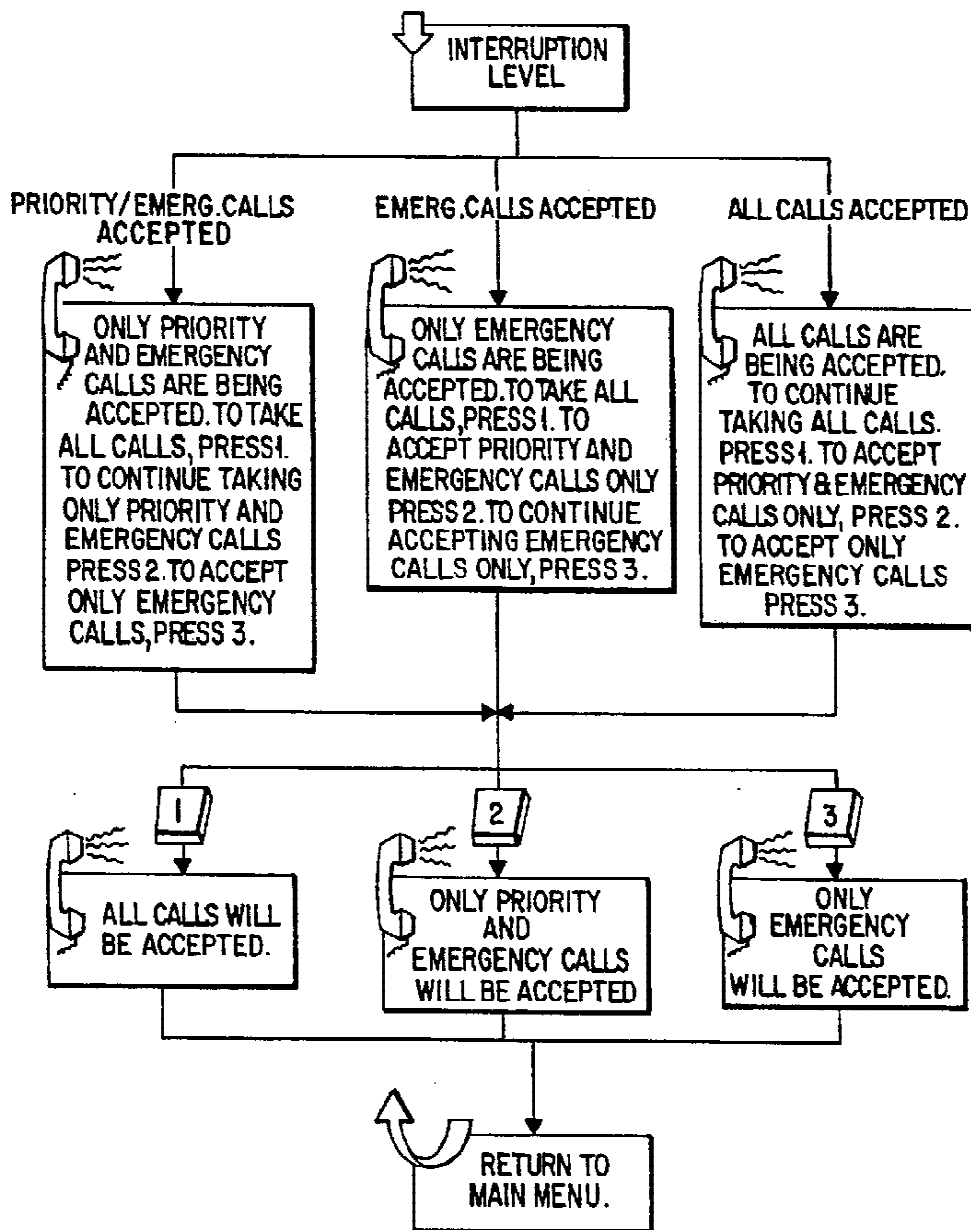


FIG. 3d

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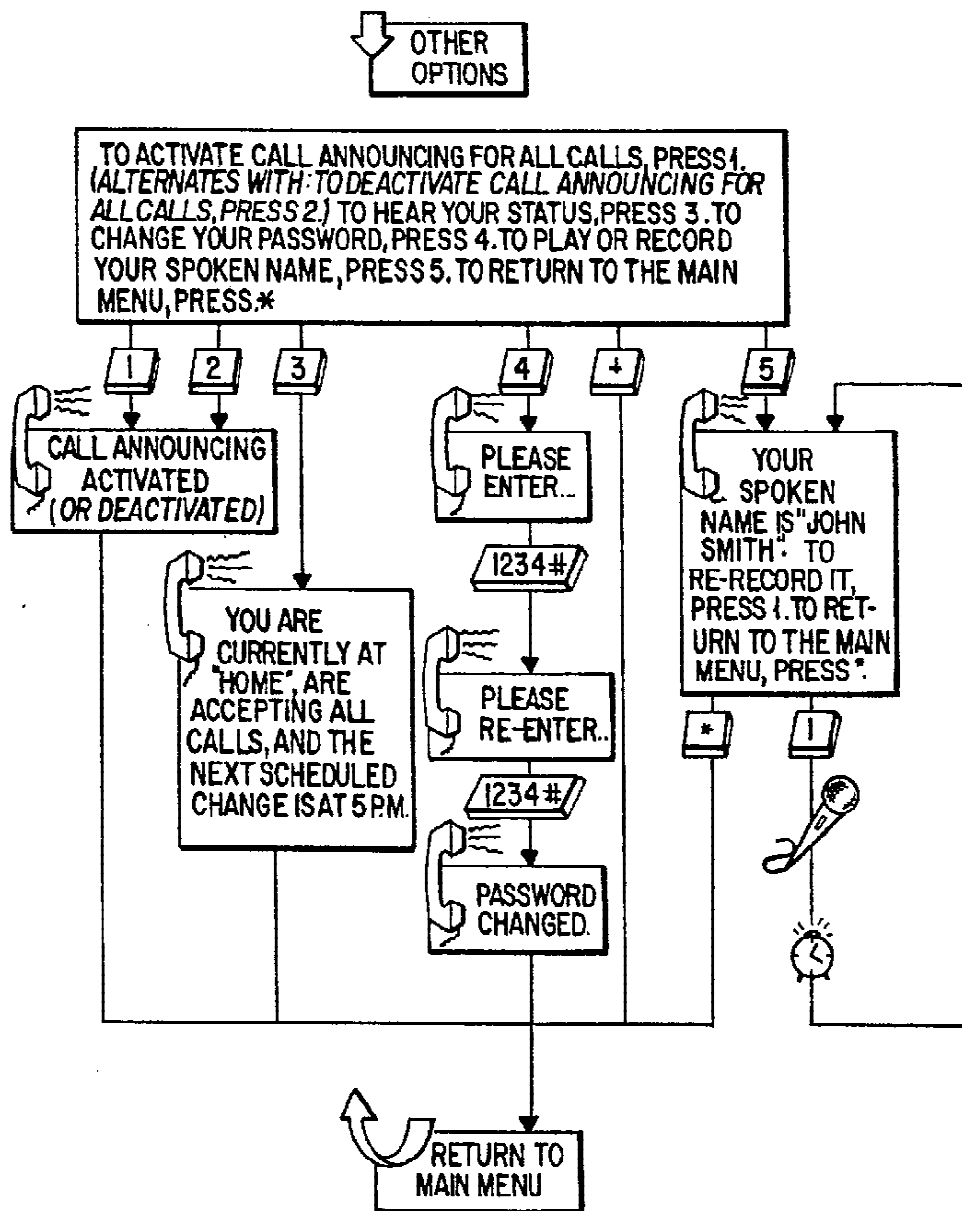


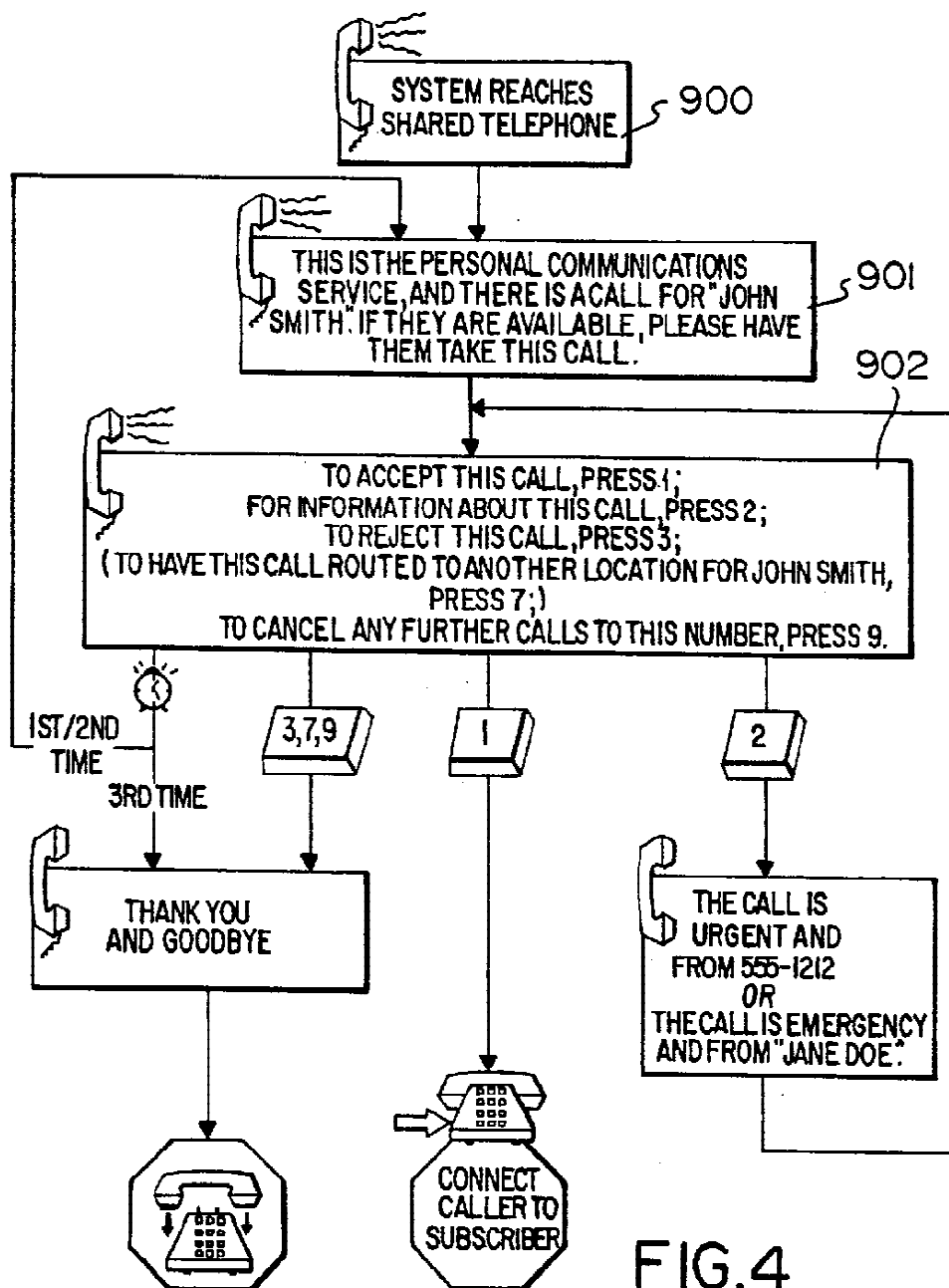
FIG. 3e

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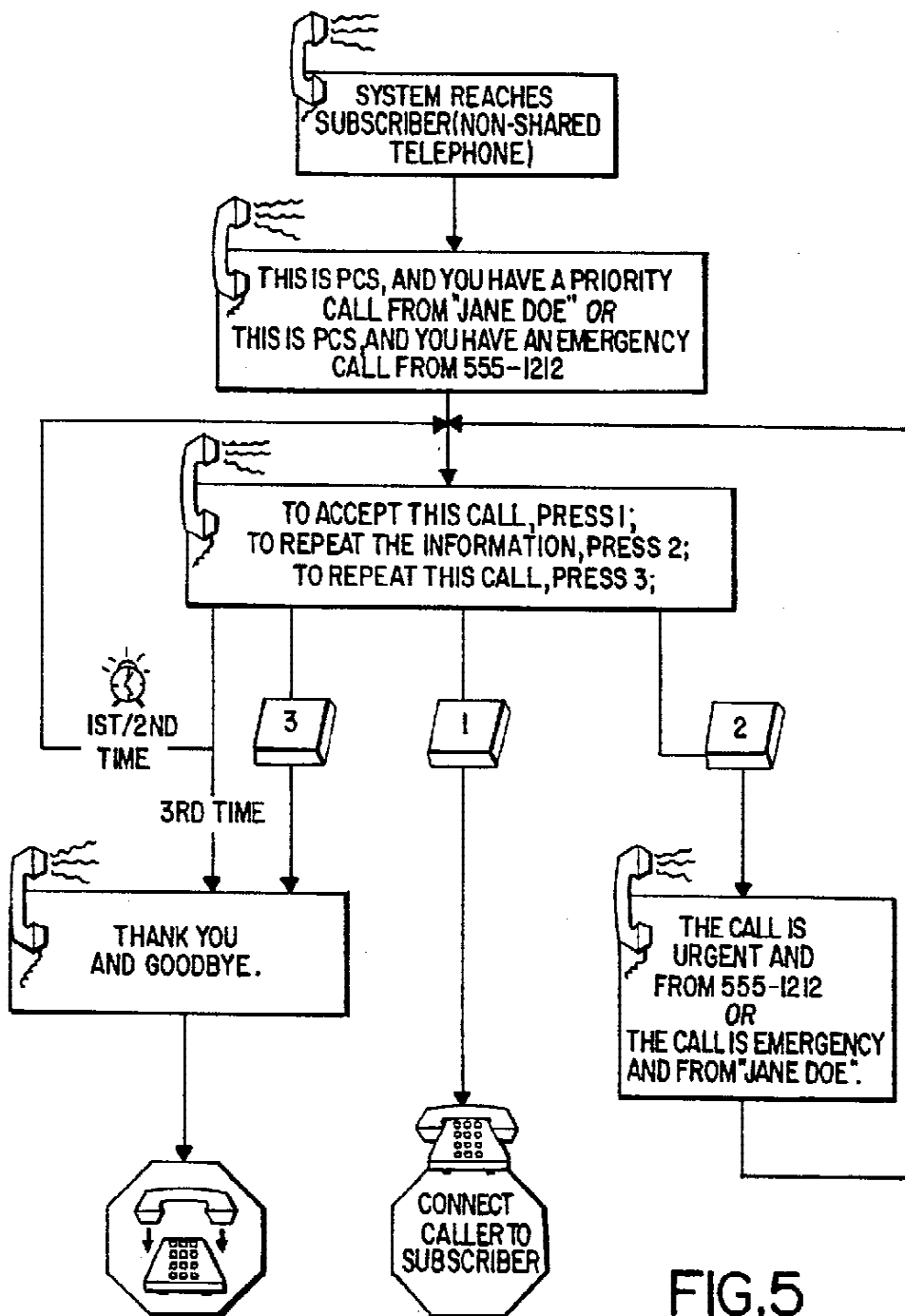


FIG.5

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PERSONAL COMMUNICATION SERVICE WITH MOBILITY MANAGER

FIELD OF THE INVENTION

This invention relates to personal communication services (PCS), but more particularly, to systems for providing a mobility/management service wherein the subscriber can tailor the telephone service to provide communication mobility and incoming call management.

BACKGROUND OF THE INVENTION

Increasingly, there is a demand for telephone services that provide easier access to a called party. For example, a new type of service is being introduced in which subscribers are provided with a single, personal telephone number used to access those subscribers regardless of their physical location. For example, callers to a personal number may automatically be connected to a business, residence, cellular or other phone, or voice messaging system, depending on where the individual they are trying to reach happens to be at the time of the call. The problem with some existing systems is that they are usually adapted to be connected externally of the telephone exchange and are therefore ill-adapted to provide efficient use of network wide features. For example, these systems cannot make use of Calling Line Identification (CLID) network features for the routing or treatment of incoming calls.

Accordingly, there is a need for a personal communication system which can be easily integrated with a network and able to offer incoming call management and communication mobility while making use of network based features.

SUMMARY OF THE INVENTION

In the personal communication service (PCS) of the present invention, calls to a personal number are routed to a PCS service node, which manages the communications services for all subscribers. The portion of the system providing PCS to an individual subscriber is hereinafter referred to as Personal Agent (PA). The Personal Agent ensures that attempts to communicate with an individual are handled with appropriate consideration for who is calling, when the call is made, and the urgency of the call. In addition, the PCS provides the subscriber personal control over the way in which the resulting system will work for them.

In accordance with one feature of the present invention, the personal communication system supports subscribers by providing communication mobility and incoming call management.

In accordance with another feature of the present invention, mobility support is provided by "Hunting", that is, attempting to contact the subscriber at a sequence of likely locations until the subscriber is reached.

In accordance with another feature of the present invention, mobility support is provided by allowing subscribers to store the ringing time allowed at each location or device when the system is attempting to reach the subscriber.

In accordance with another feature of the present invention, mobility support is provided by "Subscriber Scheduling", which allows scheduled location changes

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with the ability to override them when necessary by means of a "Schedule Override".

In accordance with another feature of the invention, mobility support is provided to subscribers located outside of their normal toll area by enabling calls to be forwarded to the remote location with long distance charges automatically directed to the subscriber's calling card account.

In accordance with another feature of the present invention, mobility support is provided by a "Shared Phone Call Announcing" service which allows the subscriber to send calls to locations which are not exclusively used by the subscriber.

In accordance with another feature of the present invention, the personal communication system supports subscribers by providing incoming call management.

In accordance with another feature of the invention, incoming call management is provided with a "Special Callers List" feature to identify those callers who should receive forced urgency, call announcing, or call blocking treatment.

In accordance with another feature of the invention, incoming call management is provided with use of Calling Line Identification (CLID) feature for routing or providing special treatment of incoming calls, according to their CLID in conjunction with "Special Callers List" features.

In accordance with another feature of the invention, incoming call management is provided with a "Subscriber Interruptability" feature which allows the subscriber to establish the urgency of calls they are willing to accept, that is, normal, priority or emergency calls.

In accordance with another feature of the invention, incoming call management is provided with a "Call Completion Query" feature, which, if desired by the subscriber, allows callers to determine how their call is to be routed if the subscriber can't be reached.

In accordance with another feature of the invention, incoming call management is provided with an "Operator Service" feature which, if desired by the subscriber and permitted by the system provider, allows callers to be connected to a system or private operator, (e.g. secretary).

In accordance with another feature of the invention, incoming call management is provided with a "Subscriber's Schedule" feature which can be used by the subscriber to automate regular changes in the urgency of calls they wish to accept.

In accordance with another feature of the invention, incoming call management is provided with a "Schedule Override" feature which allows the subscriber to easily depart from their normally scheduled call management service.

In accordance with another feature of the invention, incoming call management is provided with a "Call Completion Treatment Schedule" feature which can be used by the subscriber to indicate the treatment provided to the caller at various times when the subscriber cannot be reached.

In accordance with another feature of the invention, incoming call management is provided with an Internal or External "Messaging Service" which provides voice messaging functionality when the subscriber cannot be reached or does not wish to be disturbed.

In accordance with another feature of the invention, incoming call management is provided with an "Announcement of Caller Identification" which allows

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subscribers to make the decision to take a call once they know who is calling.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1a is a block diagram showing the interaction of the PCS service node within the Public Switched Telephone Network;

FIG. 1b is a block diagram of an embodiment of the service node for providing the personal communication services of the present invention;

FIG. 1c is a more detailed block diagram of the service node according to an embodiment of the present invention;

FIG. 2a is a general flowchart of the main caller interface;

FIG. 2b is a general caller interface flowchart showing the system greeting/announcement service;

FIG. 2c is a general caller interface flowchart showing the call urgency/completion query service;

FIG. 2d is a general caller interface flowchart showing the caller attempt connection;

FIG. 2e is a general caller interface flowchart showing how a call is directed to a pager;

FIG. 2f is a general caller interface flowchart showing how a call is directed to an external messaging system;

FIG. 2g is a general caller interface flowchart showing how a caller's name is recorded;

FIG. 3a is a general subscriber service interface flowchart showing how the main menu is accessed;

FIG. 3b is a general subscriber service interface flowchart showing how to specify a new location;

FIG. 3c is a general subscriber service interface flowchart showing how to modify the subscriber schedule;

FIG. 3d is a general subscriber service interface flowchart showing how to set the interruption level for incoming calls;

FIG. 3e is a general subscriber service interface flowchart showing how to access other options of the service;

FIG. 4 is a general interface flowchart for providing shared phone call announcement; and

FIG. 5 is a general interface flowchart of the caller identification announcement service.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the present specification, Personal Number (PN), is the term used for the single number used to access someone regardless of their physical location. The portion of the system providing PCS to an individual subscriber is referred to as that subscriber's Personal Agent (PA).

A number of network functions or configurations are required for PCS features to work properly or most efficiently. It will be evident from those knowledgeable in the art that additional network functions and enhancements can be made with the proper modifications of the network configuration. The following are network functions or configurations and the PCS features that they enable or enhance:

Calling Line Identification (CLID), when a subscriber is calling allows the subscriber service control interface to more efficiently identify the subscriber and/or the subscriber location. Also, when someone is calling the subscriber, CLID allows the PCS to manage calls based on the calling number and the special callers list. Without CLID, callers

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will require passwords to identify themselves to the system, which will require the callers to have DTMF signalling. Failing this, the subscriber's PA will have to act as if the caller is unidentified.

PN setup. When an existing number is reconfigured to be the subscriber's PN, a new number will be required for the location previously addressed by the PN. If this is not provided, PCS will not be able to terminate calls to the subscriber at that location due to destination looping.

Location configuration. When a subscribers identify themselves at a location, PCS expects calls to that location to ring unanswered, ring busy, or be answered by a human.

PCS Bypass. When PCS Bypass is enabled for a location/device mn the subscriber s list, care must be taken to configure that location/device so that unanswered and/or busy calls are returned to PCS.

As is shown in FIG. 1a, a service node 10 for providing PCS services is connected to a host node 11 forming part of the Public Switched Telephone Network (PSTN) 12. The host node 11 can, for example, be comprised of a central office switch, such as a DMS-100 (Trademark) digital telephone switch, available from Northern Telecom. When a caller 14 dials the personal number (PN) of a PCS subscriber 15, the call is intercepted by the host node 11 as being a call directed to a PCS service subscriber. From this point on, the service node 10 will interact with the host node 11 to attempt call completion according to the subscriber's profile contained at the service node 10. This can be, but is not limited to, either one of the subscriber's base location 15, remote location 16, subscriber's mobile telephone 17, subscriber's voice messaging service (not shown) or operator 18.

As shown in FIG. 1b, the service node 10 interacts with the host node 11, by making use of a voice/server mail processor 21 and a personal agent/application processor 22 used for accessing service profiles 24 of one or more subscribers. These components are currently available from Northern Telecom, as Meridian Mail Voice Processor (MMVP), and dual processor Meridian Application Equipment Module (AEM). Meridian is a Registered Trademark of Northern Telecom.

Network connectivity and switching functions can be carried out by a voice switch (not shown), or host node 11. The service node 10 is connected to host node 11 and the network 12 via an ISDN Primary Rate Access (PRA) link 23, or an equivalent link able to carry voice and signalling information. This link transports call information between the service node 10 and the host node 11. Call information includes the original dialled number, calling line identification, call redirection information, called number, etc.

The personal agent/application processor 22 makes use of databases 24 which contain the service profiles of the PCS subscribers, for providing the subscriber with communication mobility and incoming call management. Database 24, can either form an integral part of the application processor 22, voice processor 21 or be part of a separate storage facility. One of the files making up the subscriber's profile is the voice messaging file 25. This file contains information about the subscriber's voice messaging service, such as what types of message will be played, access codes required for accessing voice mail from a remote location, etc.

Another file which makes up the subscriber's profile is the Callers List 26. This list stores the identities of

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callers requiring special treatment, and the special treatment that is provided to them. Callers can be identified by CLID, or by an Identification Password entered through DTMF. An Identification Password can be given by the subscriber to a group of callers, allowing all of them access to the same special treatment, without the subscriber having to individually identify them all on the Caller List 26. A special treatment can be a System Announcement, in situations where the subscriber does not wish to communicate with the caller, or Messaging if the subscriber is willing to take messages from the caller but does not want to have the caller directly connected. Also, a special treatment can give a call a Normal, Priority, or Emergency status, if the call is to be forced to a specific status level. CLIDs can be specified by range, allowing the subscriber to give special treatment to a group of callers, e.g. all callers in local area code are routed to Messaging. A name can be associated with each entry in the list. This name is used to help in any list validation and simplify communication of subscriber requirements to the service administrator.

An example of a typical Caller List is shown below in Table 1.0

TABLE 1.0

NUMBERS	NAME	PASSWORD	SPECIAL TREATMENT
123-1111	GRANDMA		PRIORITY
444-1212	X-SPOUSE		MESSAGING
444-1313			
521-1212	X-SPOUSE'S LAWYER		SYSTEM ANNOUNCEMENT 1
555-9999	FAMILY	911911	PRIORITY
632-1234	BOSS	8020	PRIORITY, ANNOUNCE
452-XXXX	BRW		SYSTEM ANNOUNCEMENT 8

In table 1.0, "Numbers" show the CLID(s) associated with the caller. If a call from this CLID is directed to the subscriber, the special treatment will automatically be provided. If a caller enters a password associated with an entry in the Callers List, that caller will be identified to the subscriber, in a Shared Phone Announcement, by the CLID associated with that password and entry.

"Name" is a text string associated with an entry, for use by the system operator or service representative. It is also provided to the subscribers when a printed copy of the profile is sent to them for verification purposes.

"Password" is a numeric string that can be entered by a caller, and when entered, will provide the caller with the special treatment associated with that entry.

"Special Treatment" is the special handling that callers identified as being associated with this entry will receive. Important callers may receive "Priority" or "Emergency" call status, other callers may be designated to receive only a Messaging treatment, or just one of a set of pre-recorded system announcements.

Referring again to FIG. 1b, another file which also makes up the subscriber's profile is the Subscriber Number List 27. This list stores the network addresses and types of the devices and usual destinations to be used when communicating with the subscriber or leaving a message for the subscriber. The Subscriber Number List can also store the ringing time allowed at each device when attempting to connect a call. This flexibility allows calls to be progressed at the optimal speed.

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For example, slowly past devices which the subscriber needs time to answer, and quickly past devices which would be answered almost immediately if the subscriber was there to take the call.

An example of a Subscriber Number List is shown below in Table 2.0.

TABLE 2.0

ID	NAME	NUMBER	TYPE	RINGS
1	HOME	123-1234	BY-PASS ALLOWED	5
1	OFFICE	555-1234	SOLE USE	3
3	CAR	999-1234	ANNOUNCE CALLER	2
4	COTTAGE	777-1234	SHARED	5
OTHER DEVICES		NUMBER		
PAGER:		551-1155		
TYPE:		DIGITAL		
MESSAGE SYSTEM:		922-2222		
MAILBOX NUMBER:		1234		
MAILBOX PASSWORD:		555		
MWI COORDINATION:		YES		
OPERATOR:		333-4567		

As shown in Table 2.0, "IDs" are numbers used to refer to specific devices by the subscriber when changing locations, e.g. only "1#" is needed to identify the subscriber's home location.

"Name" is the pre-determined system name for locations. This can be Home, Car, Portable, Office, Cottage, Boat, etc.

"Number" is the network address of the device.

"Type" indicates whether the Shared Phone Call Announcement should occur when calls are extended to that device/location, or if all calls to that device/location should have the caller announced, or if the device can be "by-passed" (this indicates whether PCS can bypass itself when a call is directed to this location when filtering or call announcing is not required).

"Rings" indicates how long a device should be rung before "no-answer" is assumed.

"Other Devices" include the possible destinations for completing calls when a subscriber can't be reached. These can be a pager, a messaging system, or a private operator. Sufficient information is provided to allow PCS to complete the call to these destinations.

Also part of the subscriber's profile is the Subscriber's Schedule 28. Some subscribers may wish to change, at regular intervals, the way their calls are managed, e.g. only emergency calls after 11 p.m. weekdays and after midnight on weekends. Further, they may have a pattern of movement from device to device which can also be described in a schedule. The Subscriber's Schedule allows, for example, the elimination of subscriber and/or operator interaction to support regularly occurring changes. Multiple time slots can be specified, e.g. Monday-Friday 0900-1700 hours, Saturday 1030-2330 hours, and "other" which defines what happens for non-specified time slots. For each of these predefined time slots, the Schedule can list the default devices to use in contacting the subscriber during that time, e.g. Monday-Friday 0730-0800 hours use car or home number, Monday-Friday 0800-0830 hours use car or office number. This schedule could be set for the subscriber who spends half an hour commuting each morning, leaving sometime between 8:00 and 8:30 a.m. Similarly, the Schedule allows each slot to have an urgency of calls which the subscriber will accept, e.g. only urgent

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calls after 5 p.m. on weeknights and on weekends. Those subscribers who do not use scheduled changes can have a single, all-inclusive entry in their schedule, indicating their default location and interruptability.

An example of the Subscriber Schedule is shown below in Table 3.0.

TABLE 3.0

DAY	TIME	INTERRUPT- ABILITY	DEVICES
M-F	8-9	NORMAL	CAR, OFFICE
M-F	9-17	NORMAL	OFFICE
M-F	17-23	PRIORITY	HOME, CAR
SA-SU	9-17	PRIORITY	HOME, CAR, COTTAGE
DS-SU	17-23	PRIORITY	HOME, CAR
OTHER		EMERGENCY	HOME

"Day" and "Time" are used to determine which time period(s) and entry in the schedule applies to.

"Interruptability" indicates the urgency of calls that the subscriber will accept during the time period(s) specified by the entry.

"Devices" indicates which device(s)/location(s) are to normally be used when attempting to connect to the subscriber during the time period(s). Names refer to entries in the Subscriber Number List.

In addition to the Subscriber Schedule, a Call Completion Schedule is used to determine what action the system should take with a call when the caller is normally allowed to reach the subscriber, but the subscriber couldn't be reached, or was not interruptible. Table 4.0 shown below provides an example of a Call Completion Schedule.

TABLE 4.0

DAY	TIME	TREATMENT	URGENCY
M-F	9-17	MESSAGE	NORMAL
M-F	9-17	OPERATOR	PRIORITY
M-F	17-23	QUERY (MESSAGE, PAGER)	PRIORITY
M-F	17-23	MESSAGE	NORMAL
SA-SU	8-20	QUERY (MESSAGE, PAGER)	PRIORITY
SA-SU	8-20	MESSAGE	NORMAL
OTHER		MESSAGE	NORMAL
OTHER		QUERY (MESSAGE, PAGER)	EMERGENCY

"Day" and "Time" indicates which days and over which time ranges a particular treatment will be provided to a caller. "Other" is used to refer to all times not otherwise specified.

"Treatment" indicates what should be done with a call that could not be terminated by connecting it to the subscriber. Options are "Message", "Pager", "Operator", and "Query". "Query" treatment results in the caller being asked for his choice of 2 or more of the 3 available treatments.

"Urgency" indicates that only calls of at least the specified urgency are to receive that treatment. This allows calls of different urgencies to be terminated differently, e.g. to an operator (secretary) or to messaging.

Also part of the subscriber's profile are other Data files which store other subscriber information necessary to operate PCS or provide the subscriber with prompt and courteous operator service. An example of this data is shown below in Table 5.0.

TABLE 5.0

PERSONAL NUMBER:	416-555-1111
BYPASS ACCESS:	416-555-9999

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TABLE 5.0-continued

BYPASS PASSWORD:	12345
NAME:	SUBSCRIBER NAME
PASSWORD	1234
OTHER PERSONAL #S:	
MESSAGING PASSWORD	9876
CALLING CARD #:	416 555-1212 XXXX
LANGUAGE:	ENGLISH
ALLOWED FEATURES:	PAGER, SYSTEM OPERATOR REVERT, URGENCY
CALL ANNOUNCE NAME RECORDING:	NO
CALL URGENCY QUERY:	PRIORITY
ROTARY DEFAULT:	NORMAL
NOTES:	CUSTOMER IS HARD OF HEARING - SPEAK SLOWLY AND CAREFULLY WHEN GIVING ASSISTANCE

"Personal Number" is the PN of the subscriber.

"Bypass Access" and "Bypass Password" are used to directly route the Personal Number to an allowed subscriber location, using a network based forwarding feature.

"Other Personal #(s):", "Name", and "Notes:" are examples of textual comment fields which can be associated with the subscriber profile to facilitate service.

"Password" is the identification number for the subscriber, which can be used for operator verification of subscriber identity, or when the subscriber is calling the Subscriber Service Interface.

"Calling Card #" is used to charge PCS placed calls when the subscriber has directed calls to a location not local to the host node 11.

"Language" is the language to be used for the playing prompts to Subscriber's callers.

"Allowed Features" indicates which features this subscriber has access to. The options listed in Table 5.0 are for example only, and may vary according to what is specified by the PCS service provider.

"Call Announce Name Recording" indicates whether unknown callers should be prompted to record their names when Call Announcing is required.

"Call Urgency Query" can be "none", "priority", or "emergency". If "none", calls which are not assigned an urgency in the caller list will always be assumed "normal".

A Schedule Override feature has been provided since many subscriber's schedules are subject to variations. This override allows the subscriber to adjust the schedule for current circumstances without having to permanently change the schedule. For example, the subscriber can shift the next or previous scheduled change so that they occur earlier or later, or for all scheduled changes to be suspended until a future date/time. This, for example, can be useful when the subscriber is off sick, on vacation or just running a little late. Similarly, while a subscriber may normally desire that only urgent calls be connected after 5 p.m., he may wish to extend that when waiting for calls which the system will not be able to identify as urgent.

When a subscriber overrides his scheduled location to a location not in the device/location list, the new location will be assumed to be "shared", with PCS confirming that the subscriber is at the location before connecting the call. In this example, if three calls to the location are made, and no DTMF response is received by PCS to the confirmation request, or if the response indicates that the relocation is to be cancelled, PCS will cancel

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the location override and resume with the location specified in the schedule.

As is shown in FIG. 1a, incoming calls can be directed to standard permanently installed telephones 15, mobile telephones 17, a messaging service (reference numerals 21 and 29 of FIG. 1b), a system or private operator 18, numeric/digital pager or voice pager (not shown). If an incoming call is directed to a telephone which may be answered by someone other than the subscriber, then the telephone is specially indicated as being shared. Calls to this destination are provided with a Caller Announcing feature. Of course, calls to any other telephone devices may also be provided with the Call Announcing feature. Call completion at these devices requires DTMF verification at the destination that the subscriber is on the line and wishes to take the call before a caller is connected.

The PCS can transfer a call directed to a subscriber to a pre-determined external messaging system 29. If necessary, the PCS can enter the subscriber's mailbox code to prevent the caller from having to do this. Callers to a PCS subscriber whose call is to be sent to messaging will be automatically transferred to that subscriber's mailbox on the internal or external system. The target messaging system should of course be configured to operate this way. To handle caller identification overrides and emergency calls, the PCS will warn the caller to hold while their call is transferred to an external messaging system. The period of warning can be used as the "window" in which a caller can enter an identification password, or "0" for emergency/operator treatment. Subscribers to PCS can log in to their external messaging system by selecting an option in the Subscriber Service Interface. This option will result in PCS placing the subscriber on hold and a call made to the external messaging system. The PCS will then outpulse the subscriber's mailbox number and password and then drop out of the loop.

When a subscriber uses the internal, integrated voice messaging 50, the person-system interface is optimized. No PCS command "window" is required prior to transferring a caller, as the message system's "greeting" is sensitive to the PCS commands and responds appropriately, returning the caller to the PCS application if necessary. Mailbox numbers, passwords, and other information, such as the caller's number and the call's urgency, can be passed between the Personal Agent and Voice Messaging Application processors via the data processor 48 without the delays involved in waiting for an external system to answer and in outpulsing this data via DTMF. The integrated system can allow the subscriber to switch from messaging to PCS, allowing them to change PCS configurations after listening to their messages. The integration and data sharing between the PCS and messaging applications also allows for integrated statistics and billing data to be easily connected.

The PCS can also transfer a call to a PCS system operator, who can access the subscriber's Personal Agent data to determine why the subscriber can't be reached, or provide any other service offered by the operator. Similarly, the PCS can transfer the call to a subscriber defined Private Operator. This could be the subscriber's secretary, an external answering service, or other appropriate destination.

When the call is directed to a Numeric/Digital pager, the pager receives and displays a numeric message entered by the caller. If the caller does not enter a digital

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code for transmission to the pager, the PCS can provide the pager with the CLID of the caller, if it is known.

The voice pager receives a voice message recorded by the paging system. The PCS can transfer the caller directly to the paging system and leave the rest of the interaction under the control of the paging system.

Another feature disclosed with the present invention is the Hunting feature. There are times when the subscriber may be moving fairly often between a fixed set of locations (e.g. a construction manager who is away from his desk on and off all day, and carries a portable cellular phone with him when he is away). Hunting allows contact to be made with subscribers without the subscribers having to constantly update their locations manually. This feature allows the subscriber to list up to three locations by which the system is to attempt to contact him. The system will normally "hunt" to the next location if the subscriber doesn't answer, or a call to a shared telephone is answered and it is indicated that the subscriber is not there. The system is designed to stop hunting to the next location in the list if a location is busy.

Referring now to FIG. 1c, we have shown a more detailed block diagram of the voice/server mail processor 21 of the service node 10. The voice/server mail processor 21 is adapted to receive/send voice information on a voice channel 40 and data or signalling information on a data channel 41. The processor 21 is comprised of a signalling generator 42 adapted to initiate, establish and transfer calls when connected to the data channel 41 and generate DTMF signalling to external devices via the voice channel 40. The external devices can be a pager, or external voice messaging system. A prompt playback unit 43 stores various prompts which are sent to the calling party or the subscriber, when either is communicating with the system. The prompt playback unit 43 sends this information along voice channel 40. These prompts are usually the ones provided by the service provider, such as "The person you are calling does not wish to take calls at this time." or "Welcome to PCS; please hold while we try to connect you to —John Doe—". The voice recording/playback unit 44 is used for the recording and playback of the voice of an incoming caller, when the caller is asked to leave a message, or of the subscriber, when the subscriber wants to modify the welcoming message of his or her voice mail.

The DTMF recognition unit 45 is used to detect and recognize DTMF tones sent by the calling party or subscriber, when either is connected to PCS. The call progress tone detection unit 46 allows the system to detect busy, fast busy, re-order, ringing, etc., when PCS is attempting to place a call. The signalling receiver 47 is used to detect Calling Line Identification (CLID), called number, incoming calls, end of call, reason for call forwarding, etc. The type of information received will of course be dependent on the connection technology used.

The data processor 48 routes information to and from a functional block serving a call, i.e. elements 42 to 47, to the correct application processor. For example, during a PCS call, information is routed to and from the personal agent application processor 49, whereas, during the use of the system's internal voice mail, information is directed to and from the voice messaging application processor 50. The data processor 48 is also used for communicating between the two processors allowing

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the switching of application and for each application to use data accumulated by the other.

The following description of FIGS. 2a-2g is directed at describing the flow of information at the caller interface. That is, when an individual attempts to contact a PCS subscriber. The precise interface that the caller has with the PCS will depend on the subscriber's requirements and the specific PCS features in use for the subscriber. In some cases, it is possible that the caller will not have any obvious interaction with the PCS, and in others, will respond to Call Completion or Call Urgency Queries and be provided with status information. The caller will normally have available four single-digit DTMF commands. These can, for example, be:

- enter password (e.g. the numeral 4 key to prefix the password);
- operator assistance request (zero key);
- skip over welcome message (#key);
- skip directly to messaging (numeral 6 key); and
- login - subscriber's calling (key)

Additionally, callers may be requested to make a Call Completion or Call Urgency determination via DTMF signals.

In conjunction with FIGS. 1a to 1c, we can now refer to FIG. 2a, where we have shown a flowchart diagram illustrating the general caller interface options that may be available to a caller attempting to reach a PCS subscriber. Once the call has been identified as described above as being directed to a PCS subscriber, block 101, the personal agent 22 of the service node determines which subscriber profile to use, by checking the called number against the personal numbers of all PCS subscribers, block 102. In FIG. 1c, the signalling receiver 47 detects the called number and passes this to PA 22 via data processor 48, allowing the personal agent 22 to access the subscriber profile corresponding to the number called. Then, as described at block 103, the signalling receiver 47 and data processor 48 of service node 21 determines if the incoming call included the CLID. If there is a CLID, the personal agent 22 would access the profile 24 of the subscriber to determine whether the CLID matches that of a caller on the subscriber's Caller List 26. If so, then as shown at block 103, any special treatment is determined from the Caller List (see Table 1.0). If not, the default treatment is assumed, i.e. a non-urgent call.

Referring now to FIG. 2b, if the appropriate treatment is a System Greeting/Announcement 201, the caller will be connected to PCS and a voice channel 40 will become available. The personal agent 22 will instruct the data processor 48 to activate the prompt playback 43 to play the appropriate message 202. The message played to the caller again will depend on the CLID, or default treatment. Whenever a caller is hearing a PCS prompt 202, including a Call Completion Query or Call Urgency Query, they can enter an Identification Password 203 (assuming they have knowledge of one). This associates the caller with a CLID in the Special Caller List, and gives the caller the same Priority or Emergency call service associated with that CLID. This identification mechanism allows callers to receive this Priority or Emergency treatment when calling from another number or when CLID is not provided, or to override the default treatment when circumstances warrant. If the caller does enter an ID password 203, it will be detected by the DTMF detection circuit 45. The information would be passed via data processor 48 to the personal agent 22 allowing it to

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determine or confirm the identity of the caller 204 and the treatment to be provided. Also, the caller can enter other single digit commands 205, for introducing a password, skipping greetings, and immediate messaging. Again, depending on the digits, the DTMF recognition circuit 45 and data processor 48 would alert the personal agent 22 of the caller's input for the necessary treatment. If nothing is entered, the call would be processed as per the default treatment, i.e. messaging or prompt.

Callers can be queried by the system, as shown in FIG. 2c, if desired by the subscriber. For example, as shown at block 301, the caller can be asked their choice of leaving a message for the subscriber or paging the subscriber. Caller responds by keying a digit. A query can also indicate that the subscriber has requested that only "priority or emergency" calls be accepted, and ask the caller to use DTMF to signal if their call is of that level of importance. The query allows for appropriate defaults so that callers incapable of responding can be handled.

Some subscribers may have a requirement for their callers to be given a choice of routing when the subscriber cannot be reached, i.e. Call Completion Query. If a subscriber has requested this feature, the system will automatically query the caller as to which routing they desire. For example, calls can be routed to messaging, a pager (either voice or digital) or an operator.

Callers are not given any progress indication once the system has welcomed them and is handling their call, unless the system cannot connect the call to the subscriber, in which case, a prompt informing the caller is issued, and the completion treatment is performed. During this period, the system can be set-up so that the callers hear a non-synchronous audio source, as shown at block 401 of FIG. 2d. This could be music, or a custom recording.

When a connection with the subscriber is attempted, the personal agent 22, will provide the necessary signalling information to the data processor 48 so that the signalling generator 42 can initiate a call according to the subscriber's profile. This information, will be the result of the subscriber's schedule 28, subscriber's number list 27, the treatment provided to the caller and other appropriate data. As shown at block 402, the system will listen for a busy tone or wait for an answer or no answer. This is accomplished by the call progress tone detection 46. The call attempt will be made using one of the data or signalling channels 41 and a voice channel 40. If the call is made to a shared phone or callers announcement is required, the proper prompts will be played to the person answering the call. The calling party will only be connected to the far end if it is answered and, when necessary, the subscriber accepts the call by DTMF signals.

Calls directed to voice or digital pagers and external messaging systems are processed as shown at 501 and 502 of FIG. 2e and at blocks 601 and 602 of FIG. 2f, respectively. In either one of these cases, the signalling generator 42, would be directed by the personal agent to call the pagers or external messaging number and a call completion attempt will be made as described above.

When a Caller Identification Announcement is required with caller name recording, the call will be processed as shown at block 701-703 in FIG. 2g. In this case, the voice recording/playback unit 44 will be activated to record the caller's voice. Once the subscriber

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answers the call, the voice recording/playback unit will play the caller's voice to announce the caller to the subscriber.

The following description of FIGS. 3a-3e is directed at describing the flow of information for the Subscriber Service Interface when a subscriber attempts to access his or her PCS subscriber profile. The Subscriber Service Interface is directly accessed by the subscriber calling a special number, or by calling his own personal number and pressing *. This interface shows the possible mechanisms for the subscriber to control some of his most dynamic data. The interface would change depending on which features were provided to the subscriber(s). Of course, the system data and profile changes can also be done by a system operator, at the subscriber's request.

When a subscriber places a call into the PCS system, block 810, the subscriber's CLID, if known, allows the subscriber service interface to more efficiently identify the subscriber and/or the subscriber's location. If the calling number is not known, e.g. in a situation where the subscriber calls from, say a pay phone, a warning tone is heard to indicate the CLID is not known and the subscriber has to enter his or her subscriber number, see block 811-813. Subsequently, the subscriber is prompted for a password, see block 814-815. With reference to FIG. 1c, when the subscriber dials the special number, the signalling receiver will connect the subscriber to the personal agent 22. The subscriber will then be able to "communicate" with the personal agent via the prompt playback unit 43, voice recording/-playback unit 44 and the DTMF recognition unit 45. Thus, the subscriber and the personal agent 22 will interact using interactive voice response. That is, depending on the DTMF entered, a system prompt or voice response will be heard by the subscriber, leading the subscriber through the various options available. This is shown in FIG. 3a, at block 816.

If the subscriber has access to a messaging system, then a notification of messages waiting (or not) will be made available to the personal agent and subscriber via a Message Waiting Indicator link 51 from an extension system 29 or via the data processor 48 from the voice messaging application processor 50.

FIGS. 3b to 3e show a number of possible parameters that the subscriber can change from his or her profile. In FIG. 3b, the location where the subscriber can be reached is changed. In FIG. 3c, the subscriber scheduling is temporarily changed. In FIG. 3d, the Interruption Level is changed, and in FIG. 3e, other options are provided to the subscriber, such as, call announcing, status change, change of password, etc. As is shown, all of these are done using Interactive Voice Response technology. The subscriber is lead through all options by simply pressing the correct digits on his or her keypad.

FIG. 4 shows the flow of information for the Shared Phone Call Announcement Interface. When the system attempts to reach a subscriber at a telephone that has been indicated as "Shared", the system will announce that there is a call for the subscriber, using the spoken name of the subscriber, as recorded by the subscriber on the voice recording/playback unit 44. The call can be rejected because the subscriber is not there, or it can be accepted by the subscriber, or information about the call can be requested (e.g. CLID and urgency), and the call can then be accepted or rejected. The caller will not know if his call is being announced. He will receive the

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usual message indicating that an attempt is being made to contact the subscriber, and will either reach the subscriber (the call was accepted), continue to the next hunt location, or have the call completed elsewhere (e.g. the messaging service). This is shown in blocks 900-902 of FIG. 4.

In addition to the subscriber-verification provided by the Shared Phone Call Announcing, the system will allow for calls to be announced even when the subscriber is the only user of a telephone. This service is shown in FIG. 5. The subscriber is given a number of options on how to answer the incoming call.

What is claimed is:

1. A communication system for routing a call to a subscriber of a telephone mobility management service, wherein the subscriber of the service is assigned a unique personal telephone number, such that an incoming call made to the subscriber's unique telephone number is routed to the subscriber according to a call routing schedule tailored by the subscriber, comprising:

a) database means for storing:

- i) a list of network addresses associated with telephone devices for use by the service subscriber;
- ii) a list of calling line identification numbers (CLIDs) of callers identified by the subscriber as requiring special routing treatment; and
- iii) a subscriber schedule indicative of which one of said telephone devices an incoming call should be routed to, on the time and day the incoming call is received;

b) signalling receiver means for detecting the CLID of a caller when a call is received at said subscriber's unique telephone number;

c) data processing means for receiving the detected CLID and for accessing said list of CLIDs of callers, said list of network addresses and said subscriber schedule stored in said database means; and

d) application server means for routing the call according to the special routing treatment associated with the caller's CLID and subscriber schedule and wherein said subscriber can access said database means via said application server means and said data processor means to modify each list stored therein.

2. A communication system as defined in claim 1, wherein a call is routed by said application server means to a second telephone device provided in the subscriber schedule, if the subscriber cannot be reached at a first selected telephone device.

3. A communication system as defined in claim 2, wherein said list of network addresses associated with telephone devices for use by the service subscriber further provides the number of times a telephone device is to ring before said call is routed to said second telephone device.

4. A communication system as defined in claim 1, wherein the special routing treatment is stored with said list of CLIDs.

5. A communication system as defined in claim 4, wherein the special routing treatment is provided to incoming calls according to the area code contained with the CLID.

6. A method of routing a call to a subscriber of a telephone mobility management service, wherein the subscriber of the service is assigned a unique personal telephone number, such that an incoming call made to the subscriber's unique telephone number is routed to

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the subscriber according to a call routing schedule tailored by the subscriber, comprising the steps of:

- a) storing in database means:
 - i) a list of network addresses associated with telephone devices for use by the service subscriber;
 - ii) a list of Calling Line Identification numbers (CLIDs) of callers identified by the subscriber as requiring special routing treatment; and
 - iii) a subscriber schedule indicative of which one of said telephone devices an incoming call should be routed to, on the time and day the incoming call is received;
- b) accessing, when an incoming call is received, said list of CLIDs to determine whether the incoming call requires a special routing treatment;
- c) routing the incoming call, according to said special routing treatment and said subscriber schedule if a CLID is detected and contained on said list of CLIDs; and
- d) if a CLID is not detected, routing the incoming call according to said special routing treatment in response to predetermined DTMF tones.

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7. A method as defined in claim 6, wherein the special routing treatment is provided to incoming calls according to the area code contained with the CLID.

8. A method as defined in claim 6, wherein the incoming call is routed to a second telephone device provided in the subscriber schedule if the subscriber cannot be reached at a first telephone device.

9. A method as defined in claim 8, wherein said list of network addresses associated with telephone devices for use by the service subscriber further provides the number of times a telephone device is to ring before said call is routed to said second telephone device.

10. A method as defined in claim 6, wherein if an incoming call is routed to a telephone device which is shared between said service subscriber and another answering party, a prerecorded message will be sent to said shared telephone device such that the answering party is informed that the incoming call is directed to the service subscriber.

11. A method as defined in claim 10, wherein the subscriber can acknowledge his presence upon answering the incoming call on the shared telephone device, by dialling a predetermined DTMF code.

* * * * *

EXHIBIT 5

REDACTED

EXHIBIT 6

REDACTED

EXHIBIT 7

REDACTED

EXHIBIT 8

REDACTED

EXHIBIT 9

REDACTED

EXHIBIT 10

**UNITED STATES DISTRICT COURT
DISTRICT OF DELAWARE**

MICROSOFT CORP.,
Plaintiff,

v.

ALCATEL-LUCENT ENTERPRISE
and
GENESYS TELECOMMUNICATIONS
LABORATORIES, INC.,
Defendants.

Civil Action No. 07-090-SLR
Hon. Sue L. Robinson

SECOND EXPERT REPORT OF WILLIAM H. BECKMANN, PH.D.

1 and 28. Therefore, at least for the reasons stated above, Kelly does not anticipate claim 38 of the '439 patent.

i. Kelly does not anticipate claim 43 of the '439 patent.

Kelly does not anticipate claim 43 of the '439 patent at least because, as discussed *supra*, Kelly does not anticipate claim 38 from which claim 43 depends.

j. Kelly does not anticipate claim 48 of the '439 patent.

Kelly does not anticipate claim 48 of the '439 patent at least because, as discussed *supra*, Kelly does not anticipate claim 38 from which claim 48 depends.

3. Opinion regarding U.S. Patent No. 6,041,114 to Chestnut (filed Mar. 27, 1997)

I have reviewed U.S. Patent No. 6,041,114 to Chestnut (filed Mar. 27, 1997) ("Chestnut"). The Chestnut patent discloses a "telecommute server" that is used to implement a method and system for controlling call forwarding, based upon the device used by the called party to log onto a computer network. [See, e.g., Chestnut, at (57).] Chestnut teaches that the location of the called party is determined by associating the device used to log onto a computer network with a particular telephone. [Id.] As the Abstract states, "[c]alls are forwarded based upon the device used to log onto the computer network by the called party." [Id.] For example, Chestnut teaches that if the called party was logged onto the computer network from the called party office workstation, then the call would be directed to the called party office extension. [Id. col.4 ll.58-60.] If, by contrast, the called party were logged onto the computer network from the called party home workstation, then the telecommute server would instruct the PBX to forward the call to called party home phone. [Id. col.4 ll.60-64.]

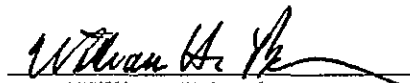
In my opinion, Mr. Hyde-Thomson has not established that Chestnut anticipates claims 1, 2, 9, 21, 24, 28, 36, 38, 43, or 48 of the '439 patent.

X. FURTHER COMMENTS

My current opinions are set forth in this report. As my analysis and investigation of the case continues, I may acquire additional information and/or attain further insights relating to my opinions. I specifically reserve the right to supplement this opinion in response to any additional information that becomes available to me, any matters raised by Defendants and/or opinions provided by Defendants' expert(s), or in light of any relevant orders from the Court, including the Court's claim construction order. Moreover, I may make additions, deletions, or modifications that would be reflected in my trial testimony. For trial, I expect to prepare diagrams, charts, and demonstratives to illustrate the issues presented. I also understand that I may be asked to prepare a rebuttal report and to give rebuttal testimony at trial on matters not covered in this expert report.

Date: _____

4/18/2008


William H. Beckmann